Secretos
03
CAJA 15

M 32/88

Estrictamente Secreto y Confidencial

Ejemplar Nº cuatro (4).

Libro BLANCO de G.B. 1988

Informe Especial de Icia Nº 18/88.-

Libro BLANCO GB 88

INDUSTRIA ARGENTINA

Don Quijote

SECRETO

CORREO DIPLOMATICO

Original

M 32/88

Embajada
de la
República Argentina
Agregación Militar

BONN (RFA) 08 de junio de 1988.-

A1 8 01 03 / 36

OBJETO: Elevar informe.

AL JEFE II - INTELIGENCIA (EMGE) - DPTO ICIA.

Adjunto elevo al deñor Jefe el Informe Especial de Inteligencia Nro 18/88, a los fines que estime corresponder.

AGREGADOS: - Informe de dos (2) páginas y cuatro (4) suplementos.

Agreg. Mil.

EMBAJADA ARGENTINA EN LA REPUBLICA FEDERAL DE ALEMANIA BELGICA AGREGACION MILITAR

CARLOS SALVADOR RUFFINO
Coronel
Agregado Militar a la Embajada Argentina
en la Republica Federal de Alemania y Belgica

Embajada
de la
República Argentina
Agregación Militar

SECRETO
CORREO DIPLOMATICO
Duplicado

BONN (RFA), 08 de junio de 1988.-

A1 8 01 03 1 36

OBJETO: Elevar informe.

AL JEFE II - INTELIGENCIA (EMGE) - DPTO ICIA.

Adjunto elevo al deñor Jefe el Informe Especial de Inteligencia Nro 18/88, a los fines que estime corresponder.

AGREGADOS: - Informe de dos (2) páginas y cuatro (4) suplementos.

Agreg. Mil.

EMBAJADA ARGENTINA EN LA REPUBLICA FEDERAL DE ALEMANIA BELGICA AGREGACION MILITAR

CARLOS SALVADOR RUFFINO
Coronel
Agregado Militar a la Embajada Argentina
en la República Federal de Alemania y Belgica

S E C R E T O

Copia Nro
AGREMIARGE
BONN (RFA)
08 Jun 88
CSR - 48

INFORME ESPECIAL DE INTELIGENCIA Nro 18/88

PAIS: GRAN BRETAÑA.

ASUNTO: PODER DE COMBATE - MALVINAS.

1. ANTECEDENTES

Orden de Reunión Permanente Jef II-Icia - Dpto Icia.

2. SITUACION ACTUAL

a. El Secretario de Defensa británico, ha presentado ante el Parlamento inglés, los informes sobre el área de defensa, apreciados para los años 1987 y 1988. Ambos documentos, que comprende cada uno dos partes, se agregan al presente informe.

b. Los documentos mencionados, exponen detalladamente la situación de las FFAA británicas, sus compromisos de defensa en el mundo entero, sus capacidades y proyectos futuros, como así también un análisis del presupuesto para cada FA.

c. En lo que interesa específicamente a Malvinas, se destacan, de los documentos correspondientes al año 1988:

1) En la figura 4, Pág 20/21 del volumen 1, se detalla el despliegue británico, incluyendo los efectivos existentes en MALVINAS.

2) En las Páginas 30/31, informa sobre los compromisos en MALVINAS, haciendo referencia a los ejercicios PURPLE WARRIOR (realizado en Nov 87, fuera del Area Malvinas) y el FIRE FOCUS, de marzo último.

d. El informe del Año 1987, también señala aspectos similares a los del Año 1988, pero remarcando aún más su presencia en Malvinas (ver Pag 22/23 del Volumen 1, Año 1987 que se agrega) e informando del Ejercicio SWIFT SWORD (Pag 36 del informe citado arriba), realizado en Nov 86 en OMAN, y oportunamente informado por esta Agregación Militar.

e. En los documentos señalados, se han iluminado los párrafos que contienen información relacionada directa o indirectamente con Malvinas, a fin de abreviar el contenido de este informe. No obstante, su explotación se estima de particular interés para la Fuerza.

3. CONCLUSIONES

a. Surgen de la información contenida en los documentos que se agregan.

b. La nueva doctrina sobre operaciones aeromóviles, que se señala en la Pag 24 del Volumen Nro 1 - Año 1988, es conveniente sea estudiada por la Dirección de Planeamiento - Dpto Doctrina, ya que la misma, concebida para el TO Centro Europa, puede tener aplicación, en caso necesario, en Malvinas.

AGREGADOS

- Statement on the Defence Estimates 1987 - 1
- Statement on the Defence Estimates 1987 - 2. Defence Statics
- Statement on the Defence Estimates 1988 - 1
- Statement on the Defence Estimates 1988 - 2

Agreg. Mil.

EMBAJADA ARGENTINA EN LA REPUBLICA FEDERAL DE ALEMANIA BELGICA AGREGACION MILITAR

CARLOS SALVADOR RUFFINO
Coronel
Agregado Militar a la Embajada Argentina
en la Republica Federal de Alemania y Belgica

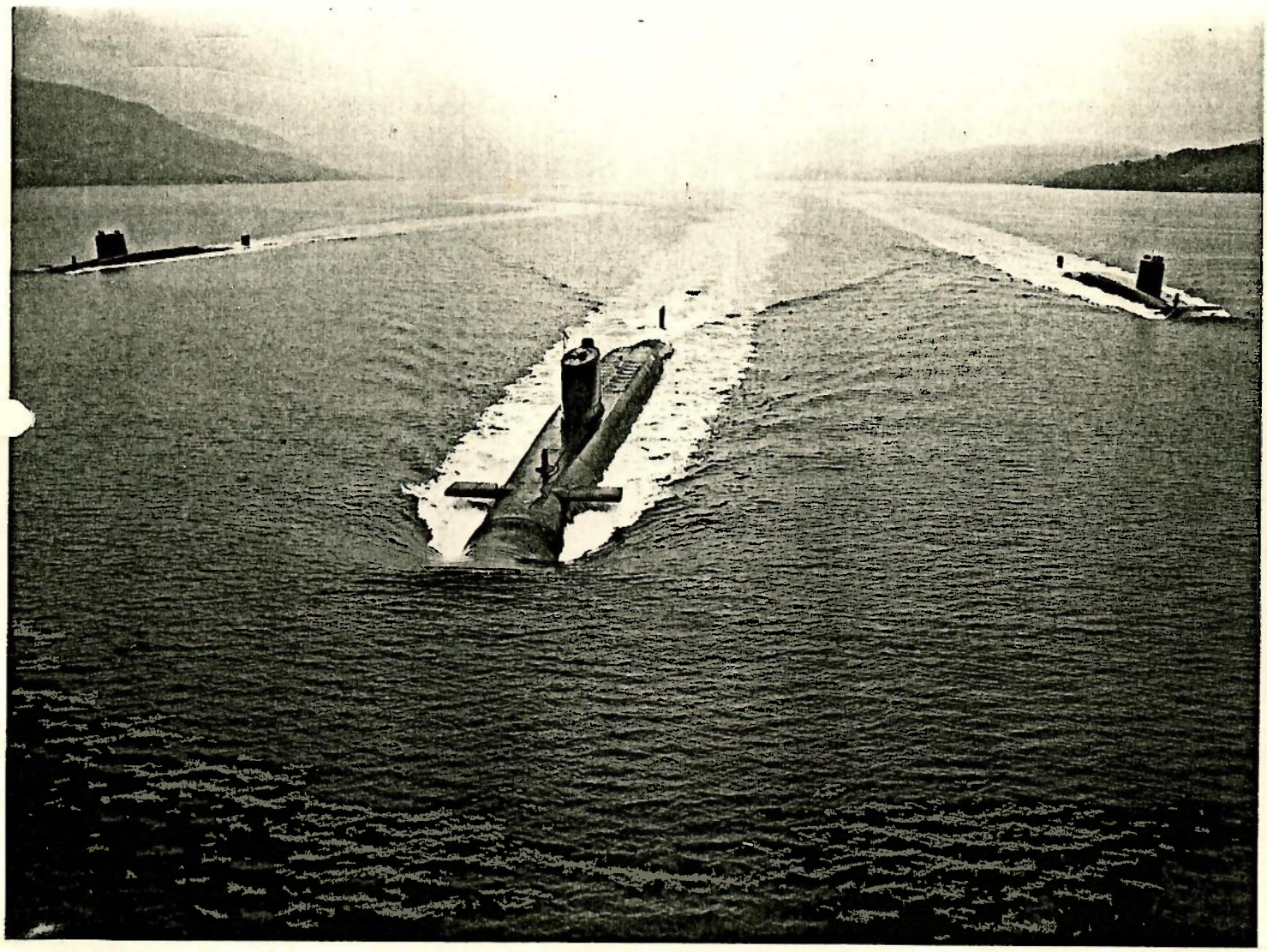
DISTRIBUIDOR: - Copia Nro 1: Jef II-Icia/Dpto Icia.
- Copia Nro 2: AGREMIARGE - BONN

M32/88

Statement on the Defence Estimates 1988

1

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1988



LONDON
HER MAJESTY'S STATIONERY OFFICE
£5.60 net

Cm 344-I

Statement on the Defence Estimates 1988

1

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1988

LONDON
HER MAJESTY'S STATIONERY OFFICE
£5.60 net

Cm 344-I

Front Cover: A rare view of HM Submarines *Revenge, Repulse* and *Resolution* in company. One Polaris submarine is always on patrol (at the time of this photograph, HMS *Renown*). Of the remainder, one is normally refitting, while the other two ai either working up or carrying out independent exercises in preparation for patrol. A fortuitous overlap in this cycle provided the opportunity for this photograph to be taken.

ISBN 0 10 1034423

Contents

The use of italics below denotes material designed either to offer additional factual background or to indicate the Government's thinking on important general issues as a stimulus to debate. These passages are distinguished from the main text by their distinctive setting and typeface.

	Page
Glossary	
Chapter One: Maintaining Security in a Changing World	**1**
The Dual Approach	1
Developments in the Soviet Union	1
The NATO Response	2
Nuclear Forces in Europe	3
The European Pillar	4
British Defence Policy	4
Soviet Military Doctrine	5
Chapter Two: Arms Control	**8**
Nuclear Arms Control	8
Intermediate Nuclear Forces	8
INF: The Making of a Treaty	8
..... *and its Implementation*	9
Strategic Arms	9
Nuclear Testing	11
Conventional Arms Control	11
The Stockholm Document	11
Conventional Forces in Europe	11
Chemical Weapons	12
Verification	13
Aims for the Future	14
The Forward Defence of Europe	15
NATO Forces on the Central Front	17
Chapter Three: The Armed Forces	**18**
Britain's Main Defence Roles	18
Mine Countermeasures in Home Waters	22
Air Defence of the United Kingdom	23
Air Mobility	24
The Royal Navy	26
The Army	27
The RAF	29
Flight Safety	29
The Merchant Fleet	29
Low-Flying Training	30
Northern Ireland	30
Out-of-Area Commitments	30
Exercise PURPLE WARRIOR	33
The Services and the Community	34
Volunteer Reserves	34
Cadets	34
Bomb Disposal	34
Search and Rescue	34
Disaster Relief	34
The ARMILLA Patrol	35
Chapter Four: Procurement	**37**
Equipping the Armed Forces	37
The Commercial Approach	37
Chips with Everything	39
Equipment Collaboration	39
The Trident Programme	40
Defence Research	41
Gruinard Island	42
Defence Exports	43
British Participation in the SDI Research Programme	43
Procurement: Keeping Up with the Times	44
Chapter Five: Money and Management	**47**
The Defence Budget	47
Value for Money	47
Financial Management	47
Investment in Conventional Defence	48
'The Next Steps'	49
Personnel	51
The Services	51
Civilians	52
Support Services	52
Defence Medical Services	52
Defence Statistics	54
Public Relations	54
The Defence Estate	54
The Meteorological Office	55
The Ministry of Defence Police	55
The Conventional Balance	56

Chapter Six: The Forces of East and West **60**

Conventional Forces 60
Land and Air Forces 60
Maritime Forces 61
Weapons Production for Warsaw Pact Forces 62
Relative Reinforcement Capability 64
Nuclear Forces 65
Strategic Forces 65
Intermediate Nuclear Forces 66
Short-Range Nuclear Forces 68
Soviet Defence Expenditure 68
Chemical Warfare 69

Annex A: The Strength of the Fleet **70**

Ships of the Royal Navy 70
Ships of the Royal Fleet Auxiliary 72
Royal Marines Commando Forces 72
Naval Aircraft 73

Annex B: The Strength of the Army **74**

Annex C: The Strength of the Royal Air Force **76**

Diagrams

Figure 1 Land-Based Theatre Nuclear Systems Remaining in Europe after Implementation of the INF Treaty 3
Figure 2 A Guide to Strategic Delivery Systems — Typical Range above 5,500 km 10
Figure 3 NATO Forces on the Central Front 17
Figure 4 Deployment of the Armed Forces, early 1988 20
Figure 5 Mine Countermeasures in Home Waters 22
Figure 6 Air Defence of the United Kingdom 23
Figure 7 Air Mobility 24
Figure 8 Exercises outside Europe in 1987 31
Figure 9 The ARMILLA Patrol 35
Figure 10 The Main Divisions of the Procurement Programme 1988-89 38
Figure 11 The Divisions of the Defence Budget by Principal Headings 1988-89 49
Figure 12 An Analysis of Defence Resources (1988-89) by Major Programmes 50
Figure 13 Estimated Cost of Defence Commitments for 1988-89 51
Figure 14 A Comparison of Defence Expenditure: NATO Countries 1987 53
Figure 15 The Current Balance of Forces on the Central Front 61
Figure 16 The Current Disposition of Forces — Atlantic to Urals 63
Figure 17 NATO and Warsaw Pact Principal Naval Forces 64
Figure 18 The Balance of Strategic and LRINF Systems — end 1987 66
Figure 19 The Balance of Shorter-Range Systems with Nuclear or Nuclear-Capable Variants — end 1987 67

Photographs

HM Submarines *Revenge, Repulse and Resolution* Cover
Soviet tanks on exercise on the North German plain 7
Soviet tank crew and British observer at a Soviet exercise in the German Democratic Republic 12
Air defence Tornado F3s of 29 Squadron 18
Challenger main battle tank 19
HMS *Cornwall,* Type 22 Batch 3 frigate, undergoing trials 25
Lynx helicopter with TOW 27
Exercise PURPLE WARRIOR: the Joint Force lands on the shores of Loch Ryan 33
Design mock-up of the European fighter aircraft 40
EH 101 on its maiden flight over Yeovil, October 1987 41
HMS *Upholder,* Type 2400 submarine, being prepared for launch 46
Soviet Mig 29 fighter, codenamed 'Fulcrum' 58
Infantryman in full CW protective kit 69

Tables

Table 1 Royal Navy Equipment 26
Table 2 Army Equipment 28
Table 3 Royal Air Force Equipment 29
Table 4 Major Exercises in 1987 32
Table 5 Collaborative Projects Involving the United Kingdom 42
Table 6 Major Equipment Ordered since 1979 48

Glossary

ABM	Anti-Ballistic Missile
ADP	Automatic Data Processing
ADV	Air Defence Variant
AEW	Airborne Early Warning
ALARM	Air-Launched Anti-Radar Missile
ALCM	Air-Launched Cruise Missile
AMF	Allied Command Europe Mobile Force
AOR	Auxiliary Oiler Replenishment Vessel
ARRV	Armoured Repair and Recovery Vehicle
ASROC	Anti-Submarine Rocket
ASM	Air-to-Surface Missile
ASW	Anti-Submarine Warfare
2 ATAF	Second Allied Tactical Air Force
4 ATAF	Fourth Allied Tactical Air Force
BAOR	British Army of the Rhine
CAPS	Conventional Armaments Planning System
CDE	Chemical Defence Establishment
CDI	Conventional Defence Improvements
CENTAG	Central Army Group
CNAD	Conference of National Armaments Directors
COBRA	Counter Battery Radar
CSCE	Conference on Security and Cooperation in Europe
CW	Chemical Warfare
DESO	Defence Export Services Organisation
DTE	Defence Technology Enterprises Ltd
ECM	Electronic Countermeasures
EH101	European Helicopter 101
EOD	Explosive Ordnance Disposal
ERB	Executive Responsibility Budget
EYE	European Year of the Environment
FPDA	Five Power Defence Arrangements
GLCM	Ground-Launched Cruise Missile
HSF	Home Service Force
ICBM	Intercontinental Ballistic Missile
IEPG	Independent European Programme Group
IGB	Inner German Border
INF	Intermediate Nuclear Forces
LAW 80	Light Anti-Tank Weapon for the 1980s
LRINF	Longer-Range Intermediate Nuclear Forces
LSL	Landing Ship Logistic
MBFR	Mutual and Balanced Force Reductions
MCMV	Mine Countermeasures Vessel
MDP	Ministry of Defence Police
MINIS	Management Information System for Ministers
MLRS	Multiple-Launch Rocket System
MOD	Ministry of Defence
MOU	Memorandum of Understanding
MP	Maritime Patrol
NATO	North Atlantic Treaty Organisation
NFR 90	NATO Frigate Replacement for the 1990s
NHS	National Health Service
NORTHAG	Northern Army Group
PE	Procurement Executive
PRU	Photographic Reconnaissance Unit
QGE	Queen's Gurkha Engineers
RA	Royal Artillery
RAE	Royal Aircraft Establishment
RAF	Royal Air Force
RAFVR	Royal Air Force Volunteer Reserve
RAuxAF	Royal Auxiliary Air Force

R & D	Research and Development
RE	Royal Engineers
RFA	Royal Fleet Auxiliary
RM	Royal Marines
RNAD	Royal Naval Armament Depot
RNR	Royal Naval Reserve
RSRE	Royal Signals and Radar Establishment
RUC	Royal Ulster Constabulary
SACEUR	Supreme Allied Commander Europe
SA 80	Small Arms for the 1980s
SALT	Strategic Arms Limitation Talks
SAM	Surface-to-Air Missile
SAR	Search and Rescue
SDI	Strategic Defence Initiative
SDIPO	Strategic Defence Initiative Participation Office
SLBM	Submarine-Launched Ballistic Missile
SLCM	Sea-Launched Cruise Missile
SRB	Staff Responsibility Budget
SRBM	Short-Range Surface-to-Surface Ballistic Missile
SRINF	Shorter-Range Intermediate Nuclear Forces
SSBN	Ballistic Missile Nuclear Submarine
STUFT	Ships Taken Up From Trade
SUBROC	Submarine Rocket
TA	Territorial Army
TOPMIS	Top Management Information System
TOW	Tube-Launched Optically-Tracked Wire-Guided Anti-Tank Missile
TRIGAT	Third Generation Anti-Tank Guided Weapon
UDR	Ulster Defence Regiment
UKADR	United Kingdom Air Defence Region
UKMF	United Kingdom Mobile Force
UN	United Nations
WEU	Western European Union

Chapter One

Maintaining Security in a Changing World

THE DUAL APPROACH

101. The last year has seen continued improvement in the atmosphere of East-West relations and important achievements for NATO's strategy for peace. At the end of 1987, the two elements of the Alliance's balanced security policy — strength in defence and readiness for dialogue — brought about the first ever negotiated reduction in nuclear weapons. At their summit meeting in Brussels in March this year, NATO Heads of State and Government reaffirmed the validity of this dual approach, and reasserted the vital importance of the Alliance's strategy of deterrence as the guarantee of our collective security. It was thus a successful year for NATO and for British defence policy, confirming our policies on the course that we and our allies must follow to maintain security in a changing world.

102. A year of unprecedented progress in arms control discussions between the United States and the Soviet Union culminated in the signature, in December 1987 at the Washington summit between President Reagan and Mr Gorbachev, of the historic treaty eliminating US and Soviet ground-launched intermediate-range nuclear (INF) missiles. As the NATO summit agreed, this is a milestone in the Alliance's efforts to achieve a more secure peace, and the result of the political courage, realism and unity of its members. Soviet leaders were brought to the conference table because NATO deployed, in the face of much opposition, limited numbers of INF missile systems comparable to those already deployed by the Soviet Union. Unilateral gestures could never have achieved the same result. Indeed, had such gestures been made, we would face today the increased threat from Soviet missiles, with no countervailing force on the Western side.

103. The last year also saw the successful introduction of the confidence- and security-building measures agreed at the Stockholm Conference of 1986. And there was encouraging progress in other areas of arms control including, particularly, US-Soviet negotiations on strategic nuclear weapons, where there is now the prospect of agreement on a treaty reducing superpower armouries by 50%. Further details are given in Chapter 2.

'There is such a horror of war in the great nations who passed through Armageddon that any declaration or public speech against armaments, although it consisted only of platitudes and unrealities, has always been applauded; and any speech or assertion that set forth the blunt truth has been incontinently relegated to the category of 'war monger' .... The cause of disarmament will not be obtained by Mush, Slush and Gush. It will be advanced steadily by the harassing expense of fleets and armies, and by the growth in confidence in a long peace.'

Winston Churchill, 1932

Developments in the Soviet Union

104. We are now at last beginning to see signs of change in the Soviet Union, reflected elsewhere in Eastern Europe. At home, Mr Gorbachev has set in train a series of wide-ranging reforms. Abroad, he has argued the need for 'new political thinking' in the nuclear and space age, and has laid stress on the growing interdependence of the countries of the world community. This 'new thinking' acknowledges that there is more to security than military might and that Soviet security cannot be maintained on terms that inevitably mean insecurity for others.

105. The British Government has welcomed the reforms that are taking place in the Soviet Union. More open internal policies, which bring the Soviet people more information about their own country and the world outside, are self-evidently desirable. And more pragmatic, less aggressive, external policies ought to make the Soviet Union a less uncomfortable neighbour. Certainly, as the Prime Minister's meeting with Mr Gorbachev at RAF Brize Norton in December 1987 again showed, we are now able to pursue our bilateral dealings with the Soviet Union in an atmosphere that is more open and constructive than before.

106. Although it would be imprudent to rely on a sustained change in Soviet attitudes, the prospect of its taking place is a challenge that the West must accept. The willingness of the present Soviet leadership to take part in the mutual concessions necessary to achieve an INF agreement is a good sign. But these are early days and we shall be looking for hard evidence, in the form of actions rather than words, that the 'new thinking' represents a genuine and lasting shift in Soviet policy towards the West, and not merely a new approach to the presentation and execution of old policies. Progress in arms control has not yet been matched by comparable steps over issues such as human rights, equally important for the creation of lasting confidence between East and West. Soviet preparedness to withdraw from Afghanistan is a welcome step, but it is too early to tell whether this heralds a new Soviet approach to regional conflicts.

107. Nor has there been any let-up in the Soviet Union's military modernisation programmes, described in Chapter 6. By the mid-1990s virtually the entire Soviet strategic nuclear force in place in the mid-1980s will have been replaced by new or modernised systems. And the Soviet Union is continuing to modernise its theatre nuclear forces in Europe, where even after the INF Treaty is implemented it will continue to enjoy a huge numerical advantage; improvements include the introduction of more accurate shorter-range nuclear missiles and the deployment of more advanced nuclear-capable aircraft, which will soon carry new nuclear-capable stand-off missiles. The Soviet Union continues to enjoy very substantial advantages in conventional forces, and is updating them so effectively that in key areas, such as aircraft and armour, the West's technological lead is being eroded (see page 56). Soviet capabilities for chemical warfare (see page 69) far outstrip those of the West and cannot be justified by any comparable threat from NATO. These Soviet forces are deployed and structured in such a way as to give them a capability for offence and surprise (see page 5).

108. There is no reason to believe that Soviet leaders want war in Europe. But the Soviet Union has not, in the past, been reluctant to exploit the threat or use of force to achieve its political ends. And its avowed aim of removing all nuclear weapons from Europe would expose the countries of Western Europe to the intimidating power of Soviet superiority in conventional and chemical forces, which could be used in attempts to impose Soviet will.

'Reflecting upon almost four decades of common endeavour and sacrifice and upon the results achieved, we are confident that the principles and purposes of our Alliance remain valid today and for the future. We are united in our efforts to ensure a world of more secure peace and greater freedom. We will meet the opportunities and challenges ahead with imagination and hope, as well as with firmness and vigilance. We owe no less to our peoples.'

The Declaration of the Heads of State and Government participating in the meeting of the North Atlantic Council, Brussels, 3 March 1988

The NATO Response

109. It was against this background that NATO leaders met in Brussels in March to take stock of the situation facing the Alliance and to set guidelines for future action. At that meeting they reaffirmed that:

- the link between the European and North American allies was vital to the security of each (see paragraph 112);
- NATO defences should remain strong, recognising the crucial role of the nuclear deterrence provided not just by the United States' strategic deterrent but also by the presence of effective and up-to-date nuclear weapons in Europe (see below);
- they were willing to seek dialogue with the countries of the Warsaw Pact and further arms control agreements (see Chapter 2), based on their confidence in a sure defence.

In particular, all the NATO leaders agreed that, for the foreseeable future, there was no alternative to the Alliance's policy of deterrence based on an appropriate mix of adequate and effective nuclear and conventional forces, and expressed their resolve to keep them up to date where necessary.

110. NATO's deterrent policy is carried out through the strategy of forward defence (see page 15) and flexible response. Effective conventional forces will remain an important element in this strategy; but, however strong, they cannot achieve deterrence alone. So long as the West faces an adversary armed with nuclear weapons, it is self-evident that we must retain a similar capability to deter him from using or threatening to use them. More fundamentally, the need for the nuclear element in deterrence rests on the imperative to avoid any further war in Europe, conventional or otherwise; for even conventional weapons, of the power now available, would bring destruction on an unprecedented scale. The achievement of conventional parity would make an important contribution to enhancing international security. But even if an equal balance of conventional forces were to be reached, it could not be relied on to prevent aggression. History offers many examples of attacks launched against the odds; for example, when Hitler invaded the Soviet Union in 1941 his forces were substantially outnumbered. For the foreseeable future, only nuclear weapons will able to confront a potential aggressor with risks so unacceptable that aggression is no longer a rational option.

111. This reality is recognised in the arms control priorities endorsed at the NATO summit, and in particular in the reaffirmation by NATO leaders that further reductions in nuclear weapons, after the reduction in US and Soviet strategic arms now under negotiation, would come about only in conjunction with the establishment of conventional balance and the global elimination of chemical weapons.

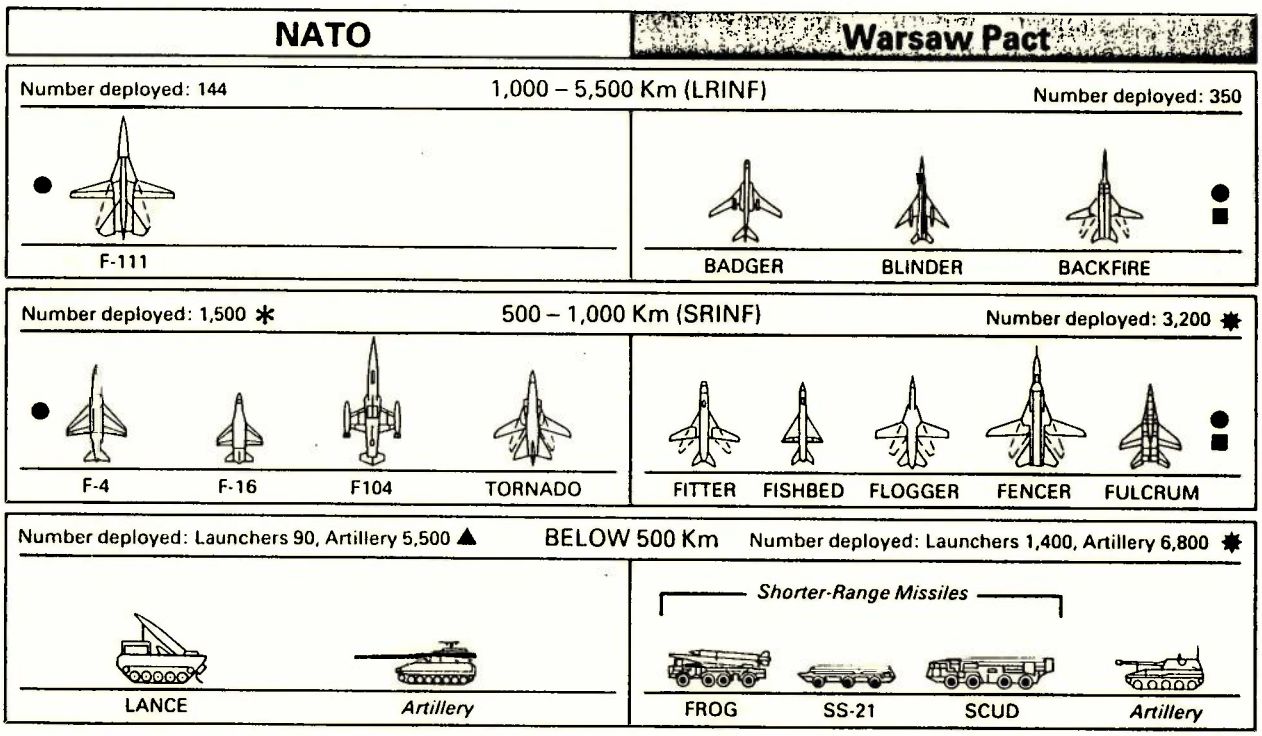
Nuclear Forces in Europe

1. The INF Agreement will remove NATO's Pershing II and ground-launched cruise missiles, but will not affect the validity or credibility of the strategy of flexible response. Even after the agreement is implemented, substantial numbers of nuclear-capable delivery systems will still be assigned to NATO's Supreme Allied Commander Europe (SACEUR).

2. These remaining systems will have to be structured effectively to ensure that they remain a balanced and survivable force. There will also continue to be a need, articulated in the decisions of the NATO Nuclear Planning Group meeting in Montebello in 1983 and reaffirmed at the NATO summit in March 1988, to keep these forces up to date, so that the West can maintain deterrence with the minimum number of warheads.

3. There is nothing new in all this; it circumvents neither the letter nor the spirit of the INF Agreement — a fact clearly recognised by the Soviet Union in its own modernisation programme (see Chapter 6); nor is it inconsistent with reducing the number of nuclear weapons in Europe, which is already 2,400 less than in 1979. It is rather part of the normal, continuing process of review and, if necessary, adjustment to ensure that NATO's forces remain effective and credible. As in the past, the United Kingdom will play its full part in this process.

Figure 1 Land-Based Theatre Nuclear Systems Remaining in Europe after Implementation of the INF Treaty ◆



◆ – French systems are not included. They comprise about 80 Mirage IIIE and Jaguar aircraft and 30 Pluton short-range missiles.
● – All capable of delivering tactical nuclear bombs.
■ – Air-To-Surface Missiles available for use.
✸ – Total Aircraft and Artillery, numbers assigned a nuclear role not known.
✱ – Of which 700 are assigned a nuclear role.
▲ – Of which 2,500 are certified for nuclear use.

70 Years On: A Country or a Cause?

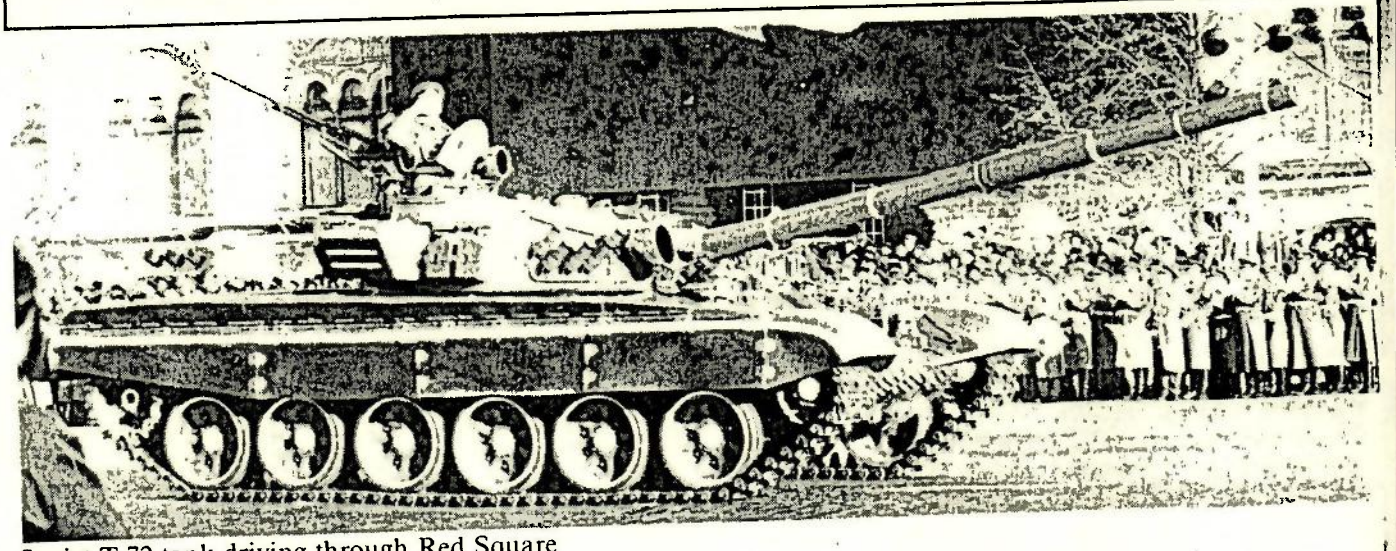
1. 1987 marks the 70th anniversary of the Bolshevik revolution, which brought the Soviet Union into being. So it is timely to ask: what is the Soviet Union today? Is it a country with values and concerns much as our own — to live in freedom and prosperity and in harmony with its neighbours? The friendly face that Soviet leaders under Mr Gorbachev present to the world has encouraged some to take that view. Or is it an implacable opponent, bent only on increasing its influence at the expense of Western interests and values? Which of these two pictures is nearer to the truth?

2. It is important that we try to understand what Soviet aims and intentions are because they must in some degree determine our own policies. The massive military potential that successive Soviet leaders have developed and have chosen to deploy facing, or to target on, Western Europe is indisputable. But we have to ask ourselves whether these capabilities are merely insurance against attack; or whether they might also have aggressive purposes. For if harmonious co-existence were the real long-term Soviet aim, and if Soviet military strength were — and would remain — merely an insurance, then the West might conceivably reduce its armaments with no fear of the consequences. If, on the other hand, expansion or the extension of Soviet influence were even a partial Soviet motive there would be a very strong argument for exercising caution in our dealings with the Soviet Union.

3. Russia has always been a difficult country for the West to understand. 'Secrecy presides over everything' was a Western view of Russia 150 years ago, and in this respect little has changed since then. The new Soviet leadership, with its policy of *glasnost'* (openness), has begun to lift the veil; but there is still a very long way to go. The secrecy has spawned a small industry in the West analysing Soviet ideology, actions, motives and intentions, with predictable scope for disagreement about the results. There is nonetheless much common ground, and this includes the importance of Russian history and of Marxist-Leninist ideology in shaping Soviet thinking and policies.

4. The Russian view of the world has always emphasised that security can only be achieved from a position of military strength. Until the 18th century Russia had no clearly defined natural frontiers to east or west; in the west this is still largely the case. Russian rulers back to the 15th century and earlier were therefore obsessed by their vulnerability to invasion and encirclement. Their way of meeting the danger was both to build up large forces to impress and frighten off potential enemies; and periodically to extend their territory. This can be seen in the sevenfold expansion of the Russian Empire between the 16th and 19th centuries, when it reached something like the size and shape of the Soviet Union today. In more recent times, Western intervention during the Russian civil war and, later, the Nazi invasion of the Soviet Union, with its appalling toll of 20 million Soviet dead, reinforced the obsession.

5. But in 1917 a new element was superimposed on the traditional Russian obsession with security: Marxist-Leninist ideology. From his seat in the British Museum, Marx had earlier posited that under 'capitalism', social relations were based on an antagonistic relationship between those who owned the means of production and those whose only possession was their ability to work. Conflict between the two was inevitable. Capitalism, however, contained the seeds of its own downfall: Marx took the view that the working class would eventually overthrow the capitalist class and establish a classless society based on production for use rather than for profit. Marx expected such revolutions to occur first in the industrialised



Soviet T-72 tank driving through Red Square

countries of Western Europe.

6. Lenin, the practical revolutionary, added two important elements to this theory. The first was the concept of an elite band of revolutionaries — the Party — who would lead the masses to a new society. He thus provided an instrument to speed the destruction of the existing order in Russia without having to wait for history to take its course. His second contribution was to take Marx's concept of the 'exploiting' and 'exploited' classes and extend it to the relationship between nations. Lenin proposed 'imperialism' as the last stage of capitalism and argued that this 'exploitation' would eventually lead colonial peoples to drive out the imperialists.

7. With the success of the Bolshevik revolution Lenin thus established in power a Party whose view was of a world divided into two implacably opposed systems, each struggling to shift the global balance of power in its own favour; a Party which held it as a scientific truth that communism would triumph in the end; and which saw its duty as giving history a helping hand wherever possible.

8. In the early days of the Second World War the Soviet Union provided a graphic demonstration of this by taking over the three independent Baltic states, Latvia, Lithuania and Estonia — formerly part of the Tsarist Empire — by agreement with Hitler under the terms of the Nazi-Soviet Pact. At the same time, eastern Poland and parts of Romania, Czechoslovakia and Finland were annexed. After the war this expansion continued, with the establishment of Soviet control over the East European countries of East Germany, Poland, Hungary, Czechoslovakia, Romania and Bulgaria. The Soviet claim that the communist regimes in these states are the product of popular national and inevitable revolution is false, since most of them were installed by means of rigged elections or manipulation, facilitated by the presence of Soviet troops; and attempts to change the situation have usually been crushed by force of arms, as in East Germany in 1953, Hungary in 1956, Czechoslovakia in 1968 and, indirectly, Poland in 1981.

9. In large part the establishment of communist regimes in these countries served as a buffer both against political 'contamination' from the West — for the existence of Western democracies in Europe is a constant reproach to the Soviet totalitarian system — and against the risk that any future conventional war might be fought on Soviet territory. Some have argued that this somehow justifies the Soviet hold over Eastern Europe. Some go on to suggest that the Soviet Union has no intention of extending its reach any further westwards into Europe. On the first point, most people would profoundly disagree that national insecurity is a fair excuse for the curtailment of others' national and individual freedoms. The second point is the nub of this essay.

10. Faced with such an assertion, we are bound to ask: can you be absolutely certain? For although we have no reason to believe that the Soviet Union would run the risk — as long as NATO remains strong and united — of a direct military incursion into Western Europe, it is difficult to ignore the evidence of past Russian and Soviet history, which has been living proof of the idea that the best form of defence is expansion. And even if Soviet leaders are not actively seeking further territorial expansion, the events of recent years suggest that they are always ready to extend Soviet political influence wherever possible, often using military means to that end.

11. Nor should we forget the basic tenets of Marxist-Leninist ideology. In 1916, for example, Lenin wrote:

> 'Socialists cannot, without ceasing to be socialists, be opposed to all war ... Only after we have overthrown, finally defeated and expropriated the bourgeoisie of the entire world ... will wars become impossible.'

Although — as the development of nuclear weapons made the very prospect of conflict between East and West horrendous — Soviet leaders ceased to regard a final war between communism and capitalism as inevitable, the Marxist-Leninist view of the continuing and inevitable struggle between the two systems remained unchanged. The liberal democratic idea of harmony between states is foreign to traditional Soviet thought: for Soviet leaders, peaceful co-existence has been seen not as a permanent condition but as a period of transition, on the way to the ultimate triumph of communism.

12. Even Mr Gorbachev has testified his adherence to the tenets of Marxism-Leninism. Consider, for example, this extract from his report to the 27th Soviet Party Congress in February, 1986:

> 'World developments confirm the fundamental Marxist-Leninist conclusion that the history of society is ..... a law-governed onward process. Not only do its contradictions pass sentence on the old world, on everything that impedes advance; they are also the source, the driving force behind the social progress that is taking place in conditions of a struggle that is inevitable so long as exploitation and exploiting classes still exist.'

13. On the other hand, at the Party Congress and elsewhere, Mr Gorbachev has spoken of 'a growing tendency towards interdependence of the countries of the world community' and of the need for 'new thinking' in the nuclear and space age. He has argued that the task of ensuring security can only be resolved by political, not military, means; that security between states can only be mutual; and that in the present situation 'confrontation between capitalism and socialism can proceed only and exclusively in the forms of peaceful competition and peaceful rivalry'. This is

and the heavy Soviet investment in recent years in developing an ability to wage a successful war in Europe without necessarily having recourse to nuclear weapons.

6. There has recently been further debate in the Soviet Union about the conduct of any war with NATO. For example, statements by Soviet strategists have played down the long-held concept that the Socialist countries could only be defended against an aggressive NATO by adopting an operationally offensive posture; but their statements do not suggest that their belief in the need to possess such a capability has yet been abandoned. This offensive capability continues to be reflected in the operational art and structure of Warsaw Pact forces today. And it explains why they have seen a need for large preponderances over NATO in conventional weaponry, especially in offensive systems such as tanks and mobile artillery (see Chapter 6 and page 56).

7. Soviet thinking on operational art stresses five aspects in particular:

- **Surprise and deception.** Operationally, surprise is seen as necessary to deceive the Alliance as to the timing of the blow; the scale, scope and axis of the offensive; and, if possible, the weaponry and techniques that will be used. Surprise, by conferring the initiative and pre-empting the establishment of a stable defence, is seen as a force multiplier enabling the Warsaw Pact to impose its style of war-fighting on the enemy.
- **Speed.** Exploiting surprise, the Warsaw Pact would intend to advance at high speed (averaging 40-60 km a day), disrupting and fragmenting the defence. By moving more swiftly than NATO could gather intelligence, take decisions and act on them, it would aim to prevent the Alliance from making timely and effective counter-moves. A rapid advance would be planned so as to reduce the danger of NATO resorting to nuclear weapons, by curtailing decision-making time, disrupting command and control, and making targeting difficult because of the intermingling of friendly and enemy forces. A rapid advance would also be expected to induce psychological and political collapse in some members of the Alliance.
- **Concentration.** With surprise achieved, the Warsaw Pact would not expect to need a large overall superiority to secure its strategic objectives. This is because it would aim to exploit its possession of the initiative to concentrate considerable local superiority (in a ratio of, perhaps, four or five to one) against vulnerable sectors, thereby achieving a rapid breakthrough and generating operational momentum.
- **Deep operation.** The Warsaw Pact would aim to attack throughout NATO's operational depth, the aim being to bring about a simultaneous collapse of front and rear, so as to enable NATO's stronger groupings to be encircled and destroyed. Thus, while the main forces advanced westwards, air and conventional missile attacks, special purpose forces, air- and sea-delivered troops and operational manoeuvre groups would attempt to erode the defence from the flanks and behind by disrupting NATO's nuclear capability, command and control facilities, reinforcements and logistics.
- **Air Superiority.** A large proportion of NATO's nuclear weapons are air-delivered (and this proportion will increase when the INF Treaty is implemented). Soviet doctrine therefore envisages, as a first priority task for all arms, the conduct of an offensive air operation, coincident with the ground forces' offensive, aimed at neutralizing NATO's theatre nuclear capability in Europe within the first few days of a conflict. This air operation would require the achievement of a measure of air superiority by attacks on NATO's nuclear-associated and air defence airfields, surface-to-air missile units and command and control facilities.

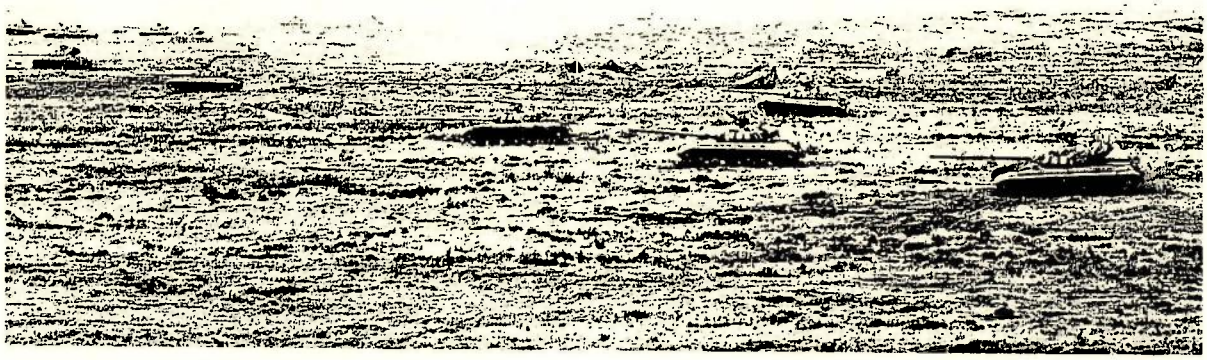
8. Warsaw Pact strategy, organisation and equipment are designed to prosecute operations at the conventional level. But the Soviet Union also continues to maintain and improve its nuclear weapons and associated delivery systems, thereby ensuring a continued ability to launch retaliatory or pre-emptive strikes at all levels, should circumstances so demand. Together with nuclear weapons, chemical weapons (see page 69) are classed by the Soviet Union as 'weapons of mass destruction', but they could be used separately from, and possibly in advance of, nuclear release. Even in peace-time the Soviet Union has over 30,000 specialised vehicles and over 70,000 personnel in the armed forces specially equipped and trained for operations in a contaminated environment.

9. The essentially defensive purpose of these offensive tactics has long been stated in Soviet military doctrine. Soviet and Warsaw Pact leaders have stressed the same point; and, as we note in Chapter 1, Soviet leaders now acknowledge that their security cannot be maintained on terms that inevitably mean insecurity for others. There is no reason to believe that they intend to start a war against Western Europe. Nonetheless, the effect of the doctrine has been to create in Eastern Europe a force that remains structured, equipped and trained for offence and surprise.

The Warsaw Pact thus has a *capability* that could be used for aggressive purposes if Soviet *intentions* should change, without the necessity for any action to be taken that might signal such a change.

10. This Warsaw Pact offensive capability lies at the root of NATO's concerns for the security of Western Europe. Hopes that the Warsaw Pact approach might change have been encouraged by statements of the Pact's political leadership. For example, when Pact leaders met in Berlin on 28-29 May 1987, they spoke of an arms control process leading to reductions of conventional forces and the elimination of disparities in Europe to a level at which both sides would be able to ensure their security, while neither would have the means to mount a surprise attack on, or conduct offensive operations against, the other. And similar thinking has been reflected in more recent statements by Soviet leaders. This apparent wish to reach an agreement on conventional forces in Europe is welcome. But the simultaneous assertion by the Warsaw Pact that a broad parity in total capability exists must be measured against the imbalance of forces in favour of the Warsaw Pact described in Chapter 6. The redress of imbalances in conventional forces will be the major NATO aim when the new negotiations on conventional stability in Europe begin (see paragraphs 212-215).

Soviet tanks on exercise on the North German plain



Arms Control

201. The INF Treaty signed in December was the arms control highlight of 1987. But progress was also made towards the other arms control priorities endorsed by NATO Ministers at Reykjavik in June 1987 and reaffirmed by NATO leaders at their summit meeting in March 1988 (see paragraph 221). This chapter records the progress made and discusses the Alliance's aims for the future.

NUCLEAR ARMS CONTROL

Intermediate Nuclear Forces

202. An INF agreement has long been a NATO priority. The treaty, which is subject to ratification, provides for the elimination of all US and Soviet ground-launched missiles with a range between 500 km and 5,500 km. To that end it requires the Soviet Union to destroy deployed systems capable of carrying some 1,700 nuclear warheads compared with about 400 on the US side, ending a huge asymmetry in favour of the Soviet Union. It also involves highly intrusive verification measures. In both respects the agreement is a major advance, and sets a good precedent for further arms control agreements that can enhance stability and security.

203. The agreement is between the United States and the Soviet Union, and involves only their systems. But the United States has fully consulted its NATO allies at all stages and on all important matters. The United Kingdom has played an active and prominent role in these consultations; and, as one of the five European countries in which US systems are based, is directly involved in the implementation of the treaty. An Exchange of Notes between the United Kingdom and the Soviet Union, and a Basing Country Agreement between ourselves and the United States, both signed in December 1987, set out the terms and procedures for verification inspections by Soviet representatives at the two bases in the United Kingdom involved in the arrangements: RAF Greenham Common and RAF Molesworth. These bases will be subject to Soviet inspection for 13 years after the agreement enters into force to establish that the cruise missile capability is eliminated, and is not surreptitiously resurrected. The United States will have similar rights in the Soviet Union and in Eastern European countries where relevant Soviet missiles have been based. The history of the negotiations, and details of the treaty's implementation, are described below.

INF: The Making of a Treaty .....

1. In the late 1970s, NATO faced an increasing disadvantage in theatre nuclear weapons. The Soviet Union was rapidly deploying new and capable systems — particularly the SS-20 missile, which could hit all Western Europe from sites deep in the Soviet Union. At the same time, NATO's longer-range INF (LRINF) systems were ageing and becoming increasingly vulnerable.

2. NATO saw a danger that the Soviet Union might come to believe that its long-range theatre forces could be used to threaten Western Europe, without a credible means of Alliance response. This could have put at risk a central tenet of NATO strategy — the need to possess an appropriate range of credible deterrent options. The challenge was to the political as much as the military strength of the Alliance.

3. In late 1979, therefore, NATO responded by deciding to deploy Pershing II and ground-launched cruise missiles (GLCMs), while at the same time making clear its willingness to negotiate limitations on this class of missile. In 1981, this concept was embodied in the Alliance's so-called zero option, which involved elimination of the SS-20s, Pershing IIs, GLCMs, and all other Soviet and US ground-launched missiles with a similar range, together with provisions to prevent circumvention by deployment of shorter-range missiles. The Soviet Union replied with a proposal whose effect would have been to block NATO deployments and preserve a Soviet monopoly of INF missiles.

4. The negotiations became stalled on variations of these basic positions, and the United States, in 1983, formally proposed an interim solution, involving parity in the missile warheads of the two sides, as a step towards the zero solution. This failed to achieve the necessary progress; the Soviet Union continued to argue, on the basis of specious comparison of figures, that parity in systems already existed, that US INF deployments should be cancelled, and that British and French strategic systems should be included in any agreement. In November 1983, the Soviet Union broke off negotiations in an attempt to force the West to cancel its INF deployments.

5. Negotiations were eventually resumed in 1985; and at the summit meeting that November the United States and the Soviet Union agreed to work for an interim INF agreement. 1986 saw progress on several elements of such an agreement; and when President Reagan and Mr Gorbachev met at Reykjavik in October the two sides moved closer to an understanding based on the elimination of all systems in Europe and a ceiling of 100 warheads elsewhere. The Soviet Union accepted that neither British nor French strategic systems would be involved; that shorter-range INF (SRINF) missiles should be part of the deal; and that specific and intrusive verification measures would have to be worked out. But the Soviet Union also insisted on linking INF to other areas of arms control, notably to constraints on the US Strategic Defence Initiative (SDI) programme.

6. 1987 saw further progress. The Soviet Union dropped the linkage issue in February; and in March the United States tabled a draft treaty embodying the progress made at Reykjavik, including the need for constraints on specified shorter-range systems. In April, Mr Gorbachev responded by proposing elimination of SRINF missiles in Europe. NATO Ministers welcomed this move in June, when they advocated the global elimination of both LRINF and SRINF missiles — the so-called global double zero option. This was accepted by Mr Gorbachev in July; and, after further discussion about the treatment of Federal German Pershing IA missiles with US-owned warheads, and about verification and phasing, the agreement was signed on 8 December.

7. The final INF Agreement is very similar to the proposal set out by NATO in late 1981: it provides for equality between the United States and the Soviet Union through asymmetrical reductions, addresses only the systems of the two countries, is global in scope, prevents circumvention by shorter-range systems, and involves stringent verification. This continuity of approach contradicts Soviet claims that it is Soviet initiatives that have dominated the arms control agenda. The INF Agreement is a success for a consistent and firm Western policy, in which clear arms control goals and force deployments have been pursued together.

..... and its Implementation

1. The treaty will come into effect on the exchange of Instruments of Ratification by the United States and the Soviet Union. It provides for the elimination of missiles and launchers as well as certain support facilities and structures, and for the verification measures necessary to monitor compliance. The elimination process will be managed in stages over a three-year period: SRINF elimination in the first 18 months; LRINF in two phases, in which each side will reduce to 200 warheads in 29 months, and then proceed to zero.

2. In the United Kingdom these provisions will affect RAF Greenham Common, where there are 96 operational US GLCMs, and RAF Molesworth, where there are 16. In addition, there are some spare missile bodies at each base. We expect that RAF Molesworth will be deactivated, and all the missiles removed, early in the elimination process. Reductions will also occur in the first phase at RAF Greenham Common, but some missiles are likely to remain there until near the end of the three-year period. Training deployments will therefore continue, as necessary, within the agreed deployment areas established by the treaty. Missiles will be removed to a designated facility in the United States for destruction. There is no obligation to destroy the permanent support structures at the two sites.

3. The United States is responsible for its compliance with the treaty. But the United Kingdom is involved fully in the verification arrangements in this country through the agreements, described in paragraph 203, governing Soviet inspection activities. Soviet inspectors will be able to inspect the two GLCM facilities to monitor compliance with the treaty (see page 13). Inspection teams will consist of up to ten inspectors, drawn from a list acceptable to the British Government. Inspections could last for up to 90 hours from entry into the United Kingdom to departure. The inspectors will be escorted at all times by both British and US personnel, and they will be liable to expulsion by the British Government if they breach agreed terms. The United Kingdom welcomes these arrangements, which apply reciprocally to US inspections in the Soviet Union and Eastern European basing countries, as a necessary part of an effective verification system.

Strategic Arms

204. The last year has also seen significant progress in the negotiations between the United States and the Soviet Union on 50% reductions in strategic offensive arsenals. This represents another of NATO's arms control priorities and the United States has closely consulted the United Kingdom and other allies as talks have proceeded. At the summit meeting in Washington in December 1987, it was agreed that the aim should be to sign a treaty, building on a number of agreed elements. These included:

- ceilings of 6,000 strategic nuclear warheads and 1,600 delivery vehicles;
- within this, ceilings on ballistic missile warheads of 4,900, and on heavy ballistic missile warheads of 1,540;
- agreed counting rules for the various delivery systems and warheads covered by these ceilings; and
- an intrusive verification system, including the right of on-site inspection, designed to deal with a regime in which missiles and systems would be reduced but not, as in the case of the INF Treaty, eliminated.

205. This provides a clear framework for a treaty, and we hope that progress will continue towards an early agreement. But a number of important issues remain to be resolved including the treatment of mobile land-based missiles and sea-launched cruise missiles, counting rules for air-launched cruise missiles, detailed verification measures, and links with ballistic missile defence research and the 1972 Anti-Ballistic Missile (ABM) Treaty.

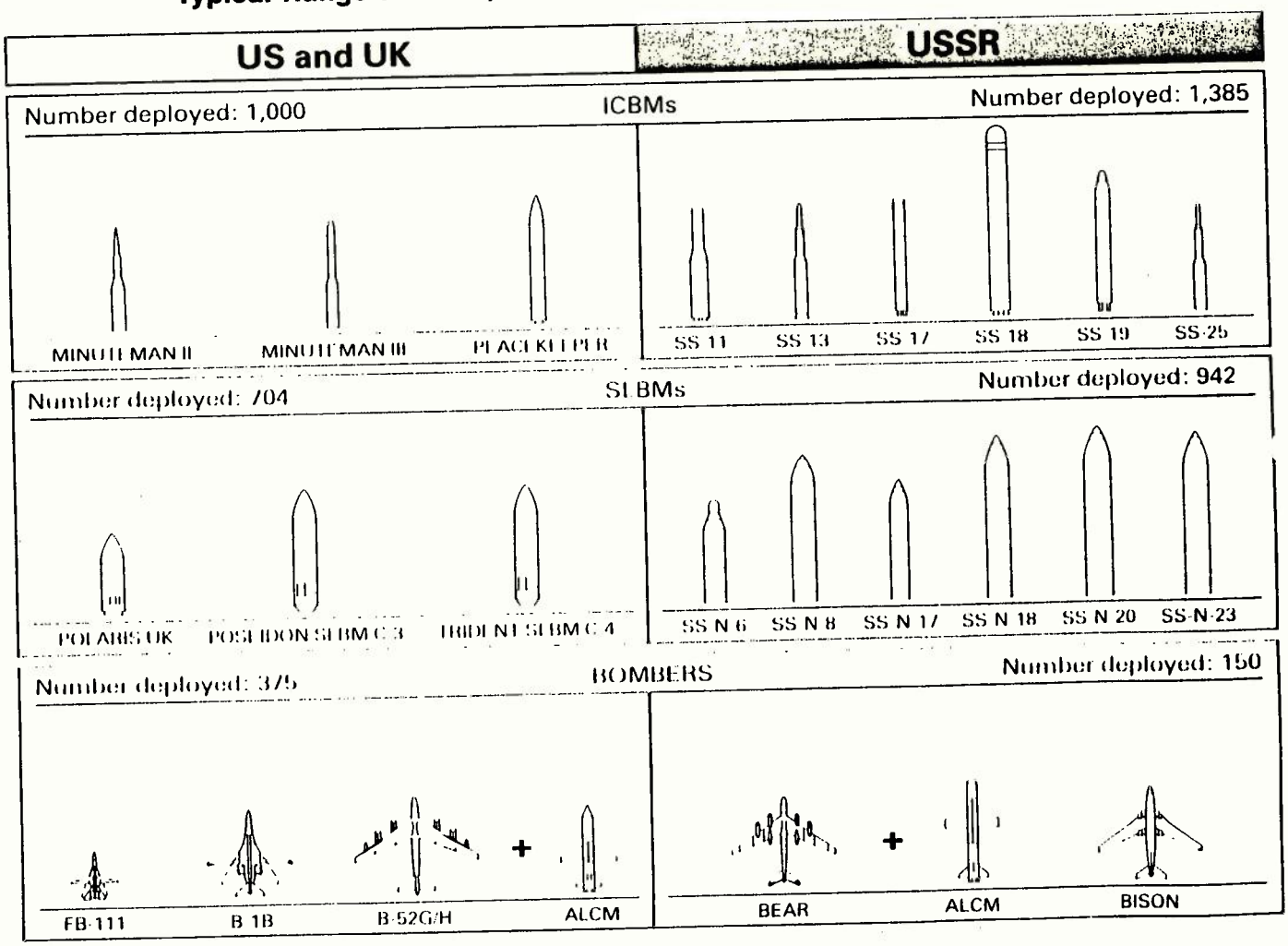
206. On the latter, the United States and Soviet Union agreed at the Washington summit to work towards a commitment 'to observe the ABM Treaty as signed in 1972, while conducting their research, development and testing, as required, which are permitted by the ABM Treaty, and not to withdraw from the ABM Treaty for a specified period of time'. They also agreed that this commitment would have the same legal status as a treaty on strategic offensive arms, and that three years before the expiry of the specified period discussions would begin on strategic stability. If, after the specified period expired, no other agreement had been reached, both would be free to decide on their courses of action.

207. Discussions to turn these words into precise agreements are continuing, and both sides have since proposed texts in the US-Soviet negotiations in Geneva. To meet Soviet concerns about the SDI, the United States has proposed a commitment not to withdraw from the ABM Treaty until 1994, annual exchanges of information on research programmes, and other provisions to develop greater mutual predictability in respect of such programmes. We hope that Mr Gorbachev's admission, before the Washington summit, that the Soviet Union is undertaking anti-ballistic missile research similar to the US SDI programme, signals a determination to reach final agreement on these issues.

208. The United Kingdom's approach to anti-ballistic missile defence research and associated treaty matters remains based on the agreements reached between the Prime Minister and President Reagan at Camp David in December 1984 and November 1986, which together state that:

— the SDI research programme which is permitted by the ABM Treaty should continue;

Figure 2 A Guide to Strategic Delivery Systems◆ — Typical Range above 5,500 km



◆ — French systems are not included. They comprise 96 SLBMs, 18 S3 missiles and about 35 Mirage IV Bombers

- the US and Western aim is not to achieve superiority, but to maintain balance, taking account of Soviet developments;
- SDI-related deployment would, in view of treaty obligations, have to be a matter for negotiation;
- the overall aim is to enhance, and not to undermine, deterrence;
- East-West negotiation should aim to achieve security with reduced levels of offensive systems on both sides; and
- these matters should continue to be subject to close consultation within the Alliance.

Against this background the United Kingdom fully supports the US SDI research programme. It is vital to our defence that the West should be at the forefront of new technology, and able to respond to the comparable and very considerable Soviet programme.

Nuclear Testing

209. The step-by-step approach to nuclear testing constraints, advocated by President Reagan in 1986 and agreed by Mr Gorbachev in September 1987, led to further US-Soviet negotiations, which opened in November. Their aim, as a first step, is to develop verification arrangements that would allow ratification of the US-Soviet Threshold Test Ban Treaty and the Peaceful Nuclear Explosions Treaty. To this end experts from each side visited the other's nuclear testing sites, at Semipalatinsk in the Soviet Union and in Nevada in the United States, in January 1988. Discussions continue on related issues.

210. The United Kingdom fully supports, and has consistently advocated, a step-by-step approach to nuclear testing issues. We support the principle of progress towards the ultimate goal of a comprehensive test ban, taking account in this of the serious verification problems that still remain to be resolved. Nuclear weapons will form part of the Western strategy of deterrence for the foreseeable future; and in the absence of a comprehensive test ban we shall continue to take all necessary measures, including periodic testing at the minimum level, to ensure that our deterrent remains credible.

CONVENTIONAL ARMS CONTROL

The Stockholm Document

211. The confidence- and security-building measures agreed in September 1986 at the Stockholm Conference on Disarmament in Europe, under the auspices of the Conference on Security and Cooperation in Europe (CSCE), have worked well:

- In December 1986, the United Kingdom and other participants carried out the first exchange of annual calendars of planned notifiable military activities.
- During 1987, states participating in the CSCE were invited to send observers to seven exercises by NATO countries and eight Warsaw Pact exercises. Of these, British forces were observed in two exercises: KEYSTONE (see paragraph 305) and PURPLE WARRIOR (see page 33). On both occasions between 30 and 40 observers attended from some 20 countries, including 12 observers from six Warsaw Pact countries. This was the first time the Warsaw Pact officers concerned had had direct contact with British soldiers. British officers observed exercises in the German Democratic Republic, Czechoslovakia and the Soviet Union.
- The provisions for on-site inspections to resolve doubts about compliance with the agreement were invoked five times during 1987: once each by the United Kingdom (a Soviet exercise in the German Democratic Republic in September), the United States (in respect of Soviet activities in the Minsk area in August), and the German Democratic Republic (an exercise by the Federal Republic of Germany in November); and twice by the Soviet Union (the multinational NATO exercise DISPLAY DETERMINATION in Turkish Thrace and a US exercise in the Federal Republic, both in October).

These represent encouraging steps forward. But there is still much to be done to achieve greater openness about military activities and capabilities.

Conventional Forces in Europe

212. NATO's aims in future conventional arms control negotiations were set out in the Brussels Declaration of December 1986. These aims were endorsed and further elaborated by NATO leaders at their summit meeting in March 1988. They include the establishment of a stable, secure and verifiable level of forces in the whole of Europe from the Atlantic to the Urals, aimed at eliminating disparities and reducing capabilities for surprise attack and large-scale offensive action. The declaration also called for further negotiations on confidence- and security-building measures, enlarging on those in the Stockholm Document. Informal discussions between NATO and Warsaw Pact representatives about a mandate for the new conventional stability talks began in February 1987. Meanwhile, a review meeting of the CSCE has been looking at ways of taking forward negotiations on confidence-building. The NATO allies tabled draft mandates for both sets of negotiations in July 1987.

213. The United Kingdom has played a leading role in developing Alliance negotiating positions and in the discussions about mandates, which have proceeded in a business-like atmosphere. Agreement has now been reached on parts of the mandate for the new conventional stability talks, which, it is hoped, will formally open later this year. The Western proposals envisage that negotiations on confidence-building will involve all 35 states of the CSCE, while those on conventional stability will be within the CSCE framework but limited to the 23 members of NATO and the Warsaw Pact.

214. The Soviet Union now acknowledges both a superiority in tanks and the need to deal with asymmetries wherever they exist. This is welcome, although it is not yet accompanied by any recognition of the overall superiority of Warsaw Pact conventional forces. The provision and serious discussion by both sides of data on force levels will be essential if progress is to be made towards an agreement. We shall therefore need to put Soviet words to the test as and when a mandate for the new talks can be agreed and full negotiations begin.

Soviet tank crew and British observer at a Soviet exercise in the German Democratic Republic

215. As the NATO summit concluded, the major problem is the Warsaw Pact's superiority in key conventional weapon systems. But other asymmetries are also important, including the Pact's capability for surprise attack and large-scale offensive action, based on forward-deployed Soviet forces (see page 5), and the geographical advantages enjoyed by the Pact with consequent benefits for its reinforcement capability (see pages 56 and 64). These asymmetries are compounded by the dominant presence of Soviet conventional forces, which make up two-thirds of all active Warsaw Pact divisions in Europe west of the Urals.

216. Meanwhile, in the negotiations on Mutual and Balanced Force Reductions (MBFR) in Vienna, dealing with conventional forces in Central Europe, NATO continues to press the Warsaw Pact to respond positively to its 1985 proposals. In particular, NATO had then suggested that agreement on the current size of either side's forces be deferred while an initial reduction in US and Soviet forces was made. It remains the case that the Warsaw Pact has neither provided adequate data on force levels nor accepted Western proposals on verification.

CHEMICAL WEAPONS

217. The United Kingdom remains committed to a global and comprehensive ban on the development, production and stockpiling of chemical weapons; and we continue to play a leading and active role in the Conference on Disarmament in Geneva, where negotiations on a chemical weapons convention are taking place. The negotiations have been dominated by Western initiatives and proposals. But over the past two years there have been welcome signs of Soviet willingness to respond more positively to Western attempts to secure a comprehensive and global convention that is truly verifiable.

218. In particular, the response to the United Kingdom's initiative on challenge inspection, at the Conference on Disarmament in July 1986, has been encouraging. In August 1987, Mr Shevardnadze announced that the Soviet Union would support a provision for mandatory challenge inspection in a chemical weapons convention, for which the British proposals could form a basis. The United Kingdom also tabled, in July 1987, a further paper setting out some of the

practical arrangements that would have to be agreed to allow the implementation of an effective global ban.

219. Despite the progress made, a number of important and complex issues still have to be resolved. The United Kingdom is continuing to press in Geneva for progress on a variety of outstanding questions concerning verification, which remains the most critical and difficult issue in the negotiations.

220. The Soviet Union has also made some useful moves towards greater openness about its chemical warfare (CW) capabilities (see also page 69). It has acknowledged, for the first time, possession of CW stocks and has claimed that stocks of chemical weapons in the Soviet Union do not exceed 50,000 tons in terms of toxic agents. This figure, however, is significantly below Western estimates of the total Soviet stockpile and requires clarification. In October 1987, the Soviet Union invited the participants in the Conference on Disarmament to visit its CW installation at Shikhany, reciprocating a similar invitation to the US facility at Tooele in 1983. This was welcome, although the visit was limited and revealed little of modern Soviet stocks and production capability. The Soviet Union has also accepted the British invitation, made in 1986, to exchange visits between the Chemical Defence Establishment at Porton Down and Shikhany; planning for this is now in hand.

Verification

'Verification is not the icing on the cake. It is an essential ingredient'.

Sir Geoffrey Howe,
Speech to the International Institute for Strategic Studies,
London,
January, 1987.

'Foolproof ..... methods providing 100% confidence that weapons are indeed being eliminated, that obligations relating to the remaining weapons and permitted military activities are being complied with, and that the bans are not being circumvented — this, and no less than this, is the verification that we envisage.'

Mr Shevardnadze,
Speech to the UN Conference on Disarmament,
August, 1987.

1. It is no longer necessary to make the case for verification. In principle, it is accepted by both East and West as an essential element of any arms control agreement. But there remains the difficult practical question of what precise measures are required in each particular case.

2. We have come a long way since the agreements of the 1970s, which either contained virtually no cooperative verification measures (the Biological Weapons Convention of 1972), or relied on the mutual acceptance by the superpowers that national technical means — essentially surveillance from space — could be used unimpeded (the SALT Agreements). The two agreements recently signed, the Stockholm Document of 1986 and the INF Treaty of 1987, both contain provisions for on-site observation and inspection.

3. **INF** verification depends on a series of interlocking obligations and measures. The global solution makes the task easier since, after elimination, the existence of a single missile would be a violation. And the obligations to destroy certain visible support structures as well as missiles, and to ban flight testing, assist the detection of violations. The detail involved in the verification arrangements is remarkable. It includes exchanges of data on each side's missile deployments and holdings, designation of deployment areas, as well as on-site inspection (including inspection at short notice) of missile bases and production plants over a period of 13 years. These arrangements will enable each side initially to check the accuracy of data exchanged, then to monitor the elimination of missiles and their production facilities, and, when that process is completed, to ensure that missiles are not reintroduced. Even more remarkable are the provisions for continuous monitoring at the perimeter of a Soviet plant assembling SS-25 missiles, where there is a particular potential for circumvention. None of this provides a guarantee that undeclared missiles could not be retained. But it reduces to acceptable limits any risk that a militarily significant operational capability could be preserved or created without detection.

4. Future agreements will need measures tailored to their individual circumstances. The verification arrangements for an agreement on **strategic arms reductions** would have to take into account the fact that many different types of systems would remain, including land-based intercontinental ballistic missiles (some of them mobile), submarine-launched ballistic missiles, cruise missiles, and strategic bombers. Monitoring of residual ceilings would therefore be essential, in circumstances where the credibility of at least some of these systems for deterrence purposes depends partly on their concealment while deployed operationally. This would be a more demanding task than verifying the INF Treaty. The verification framework that has already been agreed in the strategic arms negotiations acknowledges the need for continuous monitoring of the perimeter of critical production and support facilities, for short-notice inspection of suspect sites not otherwise declared, and for open displays of treaty-limited items at bases and ports at times chosen by the other side. The evolution of this framework into precise measures, which balance the requirements of verification, operational flexibility and national security, will be a complex and difficult matter.

5. NATO's other immediate arms control priorities, in respect of conventional and chemical weapons, arguably face even greater verification problems. In the MBFR negotiations on **conventional**

forces NATO has proposed a package of detailed measures designed to provide confidence both that initial troop reductions had occurred, and, more important, that consequent force levels were not exceeded. The measures include permanent entry and exit points through which all troops would pass, provision of detailed information on residual forces, and 30 inspections a year, in order to monitor force levels of a million men in more than 2,000 camps and barracks spread over some 200,000 square miles of Central Europe. So far the Warsaw Pact has not accepted these proposals, which it claims are disproportionate to the obligations incurred. But, in the West's view, considerably more complex arrangements would be required for any agreement — such as that envisaged in the proposed new conventional stability talks (see paragraphs 212-215) — that dealt with the whole of Europe from the Atlantic to the Urals.

6. A ban on **chemical weapons** would introduce two further complications: global coverage, and the continued need for civil industry to use relevant chemicals. The United Kingdom has taken the initiative in the Conference on Disarmament, where we have made proposals for challenge inspection and for an international system to monitor compliance, including compliance by industry. There is a difficult balance to be struck between reasonable assurance of compliance, deterrence from cheating, practicality of implementation, confidentiality of commercial information and protection of national security.

7. The main complication in verifying a **Comprehensive Test Ban** would be the difficulty of distinguishing low-level, but militarily significant, nuclear tests from natural phenomena and conventional explosions. There is also a danger that nuclear explosions could be hidden from detection by masking techniques. A step-by-step approach to this issue (see paragraphs 209-210) would help to overcome these difficulties.

8. The West has led the way in the search for practical and effective verification measures, proposing new ideas, like designated deployment areas and perimeter monitoring. The manner in which these, and other aspects of the INF verification arrangements, are implemented will influence the evolution of the more complex arrangements needed in future agreements. The details will remain all-important: if they are wrong, the benefits of arms control agreements can disappear in unresolved accusations and suspicions of non-compliance and deceit.

AIMS FOR THE FUTURE

221. When NATO Ministers reviewed their arms control aims at Reykjavik in June last year, they agreed that the prospective INF agreement would be an important element in a coherent and comprehensive concept of arms control and disarmament, which, while consistent with NATO's strategy of flexible response, would include:

- a 50% reduction in the strategic offensive nuclear weapons of the United States and the Soviet Union, to be achieved during the current Geneva negotiations;
- the global elimination of chemical weapons; and
- the establishment of a stable and secure level of conventional forces, by the elimination of disparities, in the whole of Europe.

They also concluded that, in conjunction with the establishment of a conventional balance and the global elimination of chemical weapons, tangible and verifiable reductions of US and Soviet land-based nuclear missile systems of shorter range, leading to equal ceilings, could be considered. These aims were reaffirmed by the NATO summit meeting in March, which recognised the urgency and central importance of addressing the conventional force imbalances in Europe.

222. Although the INF Agreement is a major achievement, it will not obviate the need for effective deterrence. Chapter 1 explains why nuclear weapons will still be needed for that purpose. Last year's Statement described the important contribution made by the British independent deterrent to the effectiveness and credibility of the Alliance's deterrence strategy; it also explained that the British strategic nuclear force, even when updated by the acquisition of Trident, represents the minimum capability necessary to maintain effective deterrence into the next century. The United Kingdom's position on the role of our own nuclear deterrent in strategic negotiations remains that, if Soviet and US strategic arsenals were to be very substantially reduced and if no significant changes had occurred in Soviet defensive capabilities, we would want to consider how we could best contribute to arms control in the light of the reduced threat. But US and Soviet reductions would have to go much further than 50% before we could consider including the British deter in arms control negotiations: even after such a reduction and the introduction of Trident, the British deterrent would still represent a smaller proportion of Soviet strategic offensive warheads than did Polaris when it entered full operational service in 1970.

223. The priority in strategic arms negotiations, as both NATO and the Soviet Union accept, must thus be reductions in US and Soviet arsenals, which are far greater than the forces of the other nuclear weapon states — amounting to some 95% of the world-wide total. A 50% reduction, removing many thousands of nuclear warheads, would not undermine either NATO or Soviet strategies, but would, through its political effect, significantly enhance stability. It will not be possible, however, to move towards greater stability in Europe while the significant Warsaw Pact superiorities in conventional and chemical forces remain. The United Kingdom therefore believes that there should be no negotiations about further reductions of nuclear weapons in Europe until the imbalance of conventional forces in Europe has been redressed and a ban on chemical weapons achieved.

224. NATO's future arms control aims thus address the continuing security needs of Europe, while offering realistic prospects for successful negotiation of agreements. As has been shown, significant progress has already been made. The close relationship between the arms control process and other aspects of security policy was recognised by Ministers at their Reykjavik meeting, when they commissioned work in NATO to develop a comprehensive concept of arms control and disarmament. This is now proceeding.

The Forward Defence of Europe

1. When the Atlantic Alliance was formed in 1949, it was recognised that the forces kept by the Soviet Union in Eastern Europe since the end of the Second World War posed the greatest threat to the freedom of the West. This threat has required NATO to maintain large ground and air forces of its own in the Federal Republic of Germany. But this of itself has never been enough. Any successful defence of Europe would be linked to the success of operations in the Norwegian Sea, in North Norway and the Baltic Approaches, and on the Southern Flank. This essay, therefore, looks at how the threat from the Warsaw Pact would be countered forward in the European arena as a whole.

2. NATO's strategy of forward defence dates formally from a meeting of the North Atlantic Council in New York in 1950. The determination expressed then to resist any attack on Alliance territory as far to the east as possible derives logically from the commitment made by the signatories of the North Atlantic Treaty to defend *all* the territory of the Alliance. The consequences of doing otherwise were described by the Federal German Minister of Defence, Herr von Hassel, in 1963:

> 'To regard the Federal Republic, or even a large part of Western Europe, solely as a battlefield, which NATO forces would have to liberate afterwards, would forecast the total destruction of Western Europe. This appears to me hardly a valid objective of defence policy'.

3. Initially, the forces deployed for this purpose were those of the Western occupying powers: the United States, Britain and France. But the modified Brussels Treaty and Paris Agreements of 1954 opened the way for the admission of the Federal Republic to membership of the Alliance and for the stationing of troops from other NATO countries on its soil. The exact size and composition of Alliance forces have varied over the years, but the commitment to forward defence has remained. As the Alliance made the transition from the so-called tripwire strategy of massive nuclear retaliation to the strategy of flexible response in the 1960s, the contribution of forward-deployed forces to deterrence increased in importance. Their contribution remains vital today.

4. Forward defence is not an aggressive strategy: Alliance leaders have consistently said that NATO forces will never be used except in response to an attack. Nor indeed do NATO forces have the capability to mount an offensive to seize Eastern Europe. The aim of the Alliance is to maintain sufficient forces, both in place and as reinforcements, to contribute to deterrence by demonstrating its determination to resist aggression. If deterrence should fail, the aim would be to compel the Warsaw Pact to reinforce its own in-place forces before mounting an attack; this would provide early warning of Pact intentions, enabling NATO to reinforce to its full strength and creating a breathing space in which efforts could be made to defuse the crisis. If an attack with conventional forces took place, NATO's aim would be to defend Alliance territory for as long as possible without recourse to nuclear weapons.

5. There are three interrelated elements to the forward defence of Europe:

- On the Central Front, the requirement is to counter any aggression across the Inner German Border (IGB). The Federal Republic has 30% of its population and 25% of its industrial capacity located within 100 km of the IGB. This fact alone might be sufficient to justify defending forward. But the Alliance also has little scope to concede territory for military reasons. The absence of France from NATO's integrated military structure means that all Western forces on the Central Front, with their associated airfields, ammunition dumps, support and other facilities, are located in a narrow corridor 250-350 km wide, consisting of the Federal Republic and the Benelux countries. There are also tactical advantages to be gained from such a strategy; the terrain close to the IGB contains marshes, canals, rivers and urban sprawl, all of which favour the defender.
- Forward deployment of NATO's maritime power is an integral part of the strategy, and British maritime forces play a particularly valuable role. The conventional defence of Europe depends

on safeguarding trans-Atlantic and cross-Channel lines of communication, which are vital to the reinforcement of Europe. The Soviet threat would come especially from submarines capable both of disrupting our shipping and, in the case of those armed with cruise missiles, of launching conventional or nuclear attacks on land targets. In the event of conflict, containment of these forces as far to the north as possible would be the most effective way of reducing the threat in the greater expanse of the Atlantic Ocean; and would help to safeguard the United Kingdom and the countries of the Northern Region.

- On NATO's flanks, the security of Alliance countries depends on the reinforcements required for their defence arriving in time. Britain's main contribution is in the Northern Region where, as well as our forward maritime role, British amphibious, land and air reinforcements must deter aggression and help our allies hold the ring until the arrival of major US forces. Any alternative strategy would leave Norway, Denmark and Iceland at risk. It would also increase the threat, via the Baltic Approaches, to the Central Front and the United Kingdom. While British forces make a smaller contribution in the Southern Region, a similar Alliance commitment there is equally important to the integrity of NATO's defence, and is an indispensable element in the cohesion of the Alliance.

The Britjsh forces that contribute to forward defence are set out in paragraph 302. The disposition of NATO forces on the Central Front is described below.

6. Forward defence does not necessarily imply a static defence. At sea and in the air this is self-evident, but it is equally true on land. In order to take advantage of force improvements, such as recent developments in anti-armour capability, Northern Army Group (NORTHAG) has adopted a more mobile operational concept that acknowledges the possibility of initially having to yield ground. Reconnaissance forces would identify the main axes of attack and a quick-reacting covering force would, if necessary, delay the enemy to allow the main forces to prepare defensive positions. Ground defence forces, supported by air forces, would then exploit obstacles and minefield barriers to break up and reduce invading forces, while mobile reserves (including air-mobile forces — see page 24) would attack the flanks and the rear of enemy spearheads.

7. While NATO ground forces would seek to defeat the first wave of Soviet troops, NATO air forces have several roles, including defence against Soviet air power, air support involving short-range attacks on Soviet ground forces, and interdiction of follow-on forces. The Alliance is now updating its land/air concept for Follow-On Forces Attack. This is intended to delay the movement and arrival of enemy second echelon forces and to disrupt the timing and coordination of combined operations, thus relieving the pressure on NATO ground forces. In all this, the inherent flexibility, reach and rapid reaction of air power would be crucial.

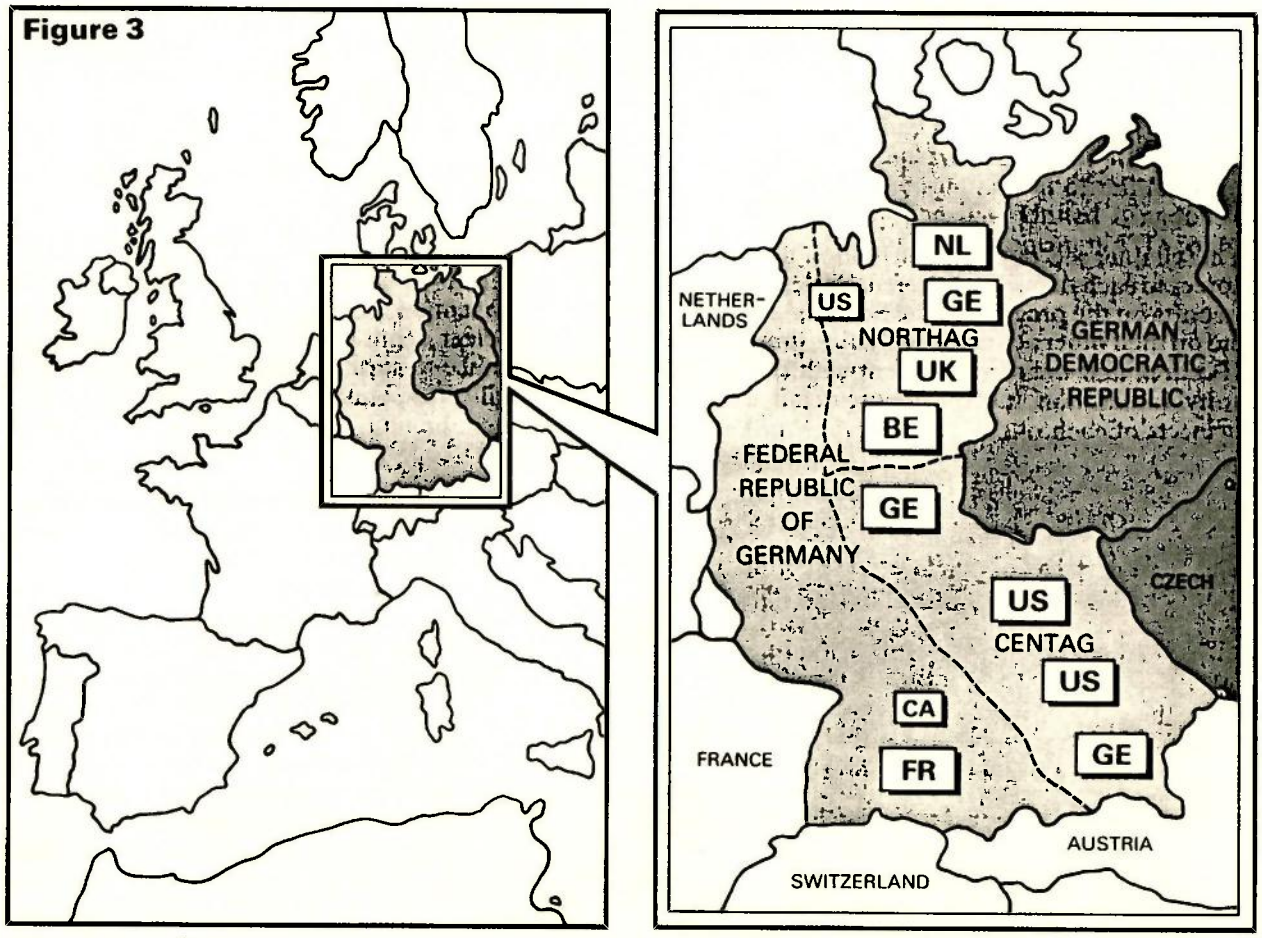
8. The chief problems that face NATO in carrying out this strategy are the numerical superiority of the Warsaw Pact forces in the area, and NATO's reliance on reinforcement to bring its own forces up to full strength. Reinforcement is essential because an unacceptable burden would be placed on the Federal Republic and other contributing nations if forces were stationed at full battle strength on the Central Front in peace-time. But such a strategy carries risks. The problem is most severe for North American and British reinforcements, which involve movement by sea of large quantities of men and materiel. But Dutch and Belgian reinforcements would have to travel up to 200 km and, of NATO forces actually in the Federal Republic, fewer than 25% are based within 50 km of their intended defensive positions. The Warsaw Pact, by contrast, can reinforce its own forces relatively easily (see page 64).

9. Nevertheless, provision of forward-deployed NATO forces of sufficient strength, readiness and capability provides an essential component of flexible response, and helps avoid undue reliance on early use of nuclear weapons. Forward-deployed forces also give a clear signal to the Soviet Union that aggression will instantly involve the forces not just of the Federal Republic but also of the United States and other allies. As long as US forces contribute to forward defence in Europe, the Soviet Union can be in no doubt that any attack would involve a superpower confrontation, with all the incalculable risks of escalation to a nuclear exchange that this would entail.

16

NATO Forces on the Central Front

Figure 3



1. The British contribution on the Central Front, 1 (BR) Corps and RAF(Germany), is described in paragraph 302. With a peace-time strength of some 55,000 Army and 12,000 RAF personnel it is larger than the contribution of any of our continental allies except the Federal Republic. The US presence is some 250,000 strong, Belgium's 29,000, the Netherlands' 8,000, Canada's 6,000 and that of the Federal Republic itself, 495,000. Although France does not participate in NATO's military structure, it stations 50,000 troops in the Federal Republic under the terms of the modified Brussels Treaty of 1954. In time of crisis or tension all these in-place forces would be substantially reinforced (see page 64). On mobilization, the size of the British forces would be nearly trebled.

2. All these forces generally remain under national control in peace-time and, with the exception of the French, are transferred to NATO under the command of SACEUR in time of tension or war. The map shows how they are distributed. The Central Front is divided into two Army Groups (NORTHAG, commanded by a British officer, and CENTAG), each of which is sub-divided into four sectors. Each sector is the responsibility of a national corps (a group of two to four divisions comprising 35-90,000 men before reinforcement). Looking from north to south in NORTHAG there are Dutch, Federal German, British and Belgian corps; and in CENTAG there are a Federal German, two American and a further Federal German corps. French and Canadian forces are held further back in the south, and an American brigade (the forward-positioned part of a US corps normally based in the United States) is similarly placed in the north. The allied air forces are divided into two tactical air forces (2 ATAF in the north commanded by a British officer, and 4 ATAF in the south) under the overall command of COMAAFCE (Commander Allied Air Forces Central Europe).

The Armed Forces

301. This chapter sets out the contribution made by the armed forces to each of our main defence roles during the year. It reports on the progress of the Services' equipment plans and on their other activities, including those outside the NATO area and their involvement with the civilian community. In addition, it takes a more detailed look at topical aspects of each of the three Services' tasks.

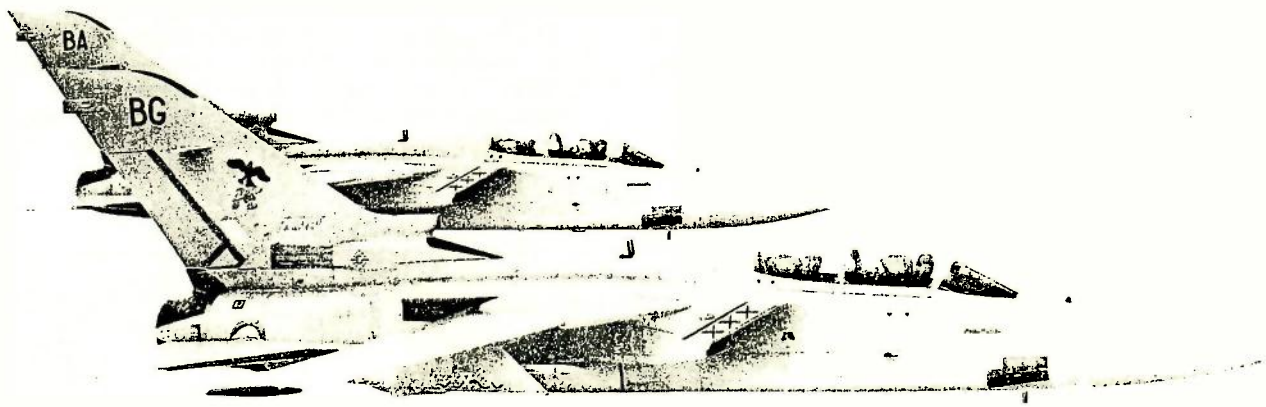
BRITAIN'S MAIN DEFENCE ROLES

302. The great majority of our forces are committed to carrying out our four main roles in NATO:

— **Nuclear Forces.** Since 1969, Britain's strategic force of last resort has been the Royal Navy's Polaris submarines, at least one of which is on patrol at all times. These vessels will be replaced by Trident missile-carrying submarines in the mid-1990s (see page 40). Our theatre nuclear-capable forces comprise nine RAF strike-attack squadrons of Tornado GR1 and two of Buccaneer, based in the United Kingdom and the Federal Republic of Germany, which can conduct nuclear operations with British free-fall bombs as well as fulfilling their conventional role; the Royal Navy's Sea Harrier aircraft and ship-borne anti-submarine helicopters, which, together with RAF Nimrod maritime patrol aircraft, are able to deliver both conventional and nuclear weapons, including US nuclear depth bombs; and one regiment of Lance surface-to-surface missiles and four regiments of artillery operated by the Army in the Federal Republic and capable of firing nuclear warheads supplied by the United States.

— **Defence of the United Kingdom.** The direct defence of these islands involves all three Services. The RAF, assisted by the Royal Navy, is responsible for the air defence of the United Kingdom and the surrounding seas (see page 23). The Royal Navy and the RAF help to keep open our resupply routes across the Atlantic, and the mine countermeasures vessels of the Royal Navy and the Royal Naval Reserve (RNR) combat the threat posed to our ports and coastal waters by mines (see below). On the ground, the task of protecting vital military bases and installations falls mainly to the Army and the RAF. Over 100,000 ground forces are available for the defence of the United Kingdom, including the Home Service Force (HSF), the Royal Auxiliary Air Force (R Aux AF) Regiment and elements of the Territorial Army (TA), as well as elements of the Royal Navy and Royal Marines.

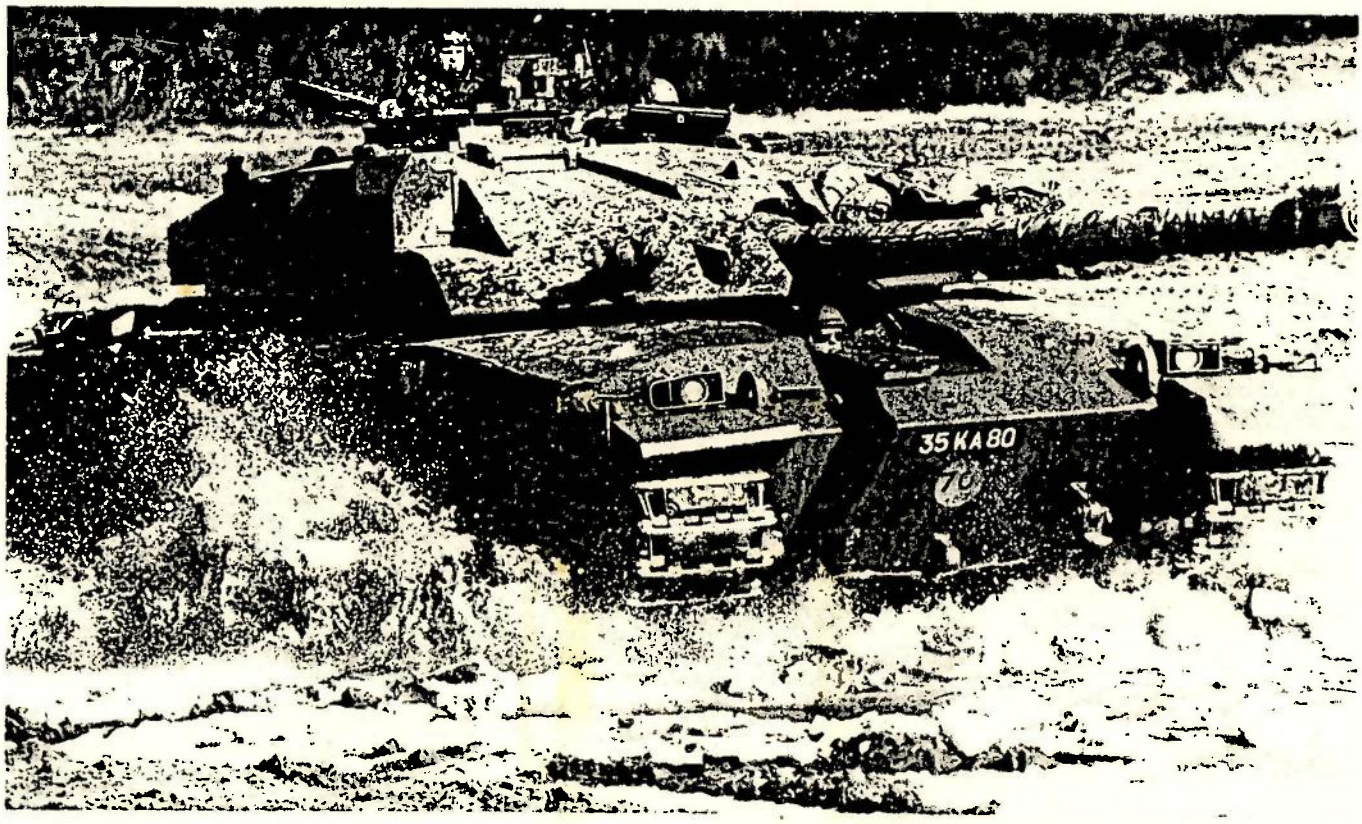
Air defence Tornado F3s of 29 Squadron



— **Defence of the European Mainland.** We station ground and air forces on the Continent as our contribution to the forward defence of NATO and in fulfilment of our commitments under the modified Brussels Treaty; and we keep forces ready to reinforce the flanks in times of tension (see page 15). The British Army of the Rhine (BAOR), based in the Federal Republic, is the main component of our forces on the Continent. It consists of 1(BR) Corps, which forms part of NORTHAG, and is responsible for the defence of a 65 km stretch of front. The Corps comprises three divisions, which include armour, infantry, artillery and air defence units. Other ground forces, based in the United Kingdom but ready for rapid deployment to reinforce NATO's flanks, include the British contingent of the United Kingdom and Netherlands Amphibious Force and the United Kingdom Mobile Force (UKMF) for use in the Northern Region, and a contribution to the Allied Command Europe Mobile Force (AMF), which could deploy to either the northern or southern flank; the RAF's transport force contributes to this capability. RAF Germany consists of 15 squadrons of aircraft, and forms part of 2 ATAF. Its main role would be to carry out long-range attacks against enemy airfields and lines of communication; and RAF squadrons would provide air defence, tactical reconnaissance, close air support for the Army, and logistics and tactical air transport. We also maintain forces, not assigned to NATO, in Berlin and Gibraltar.

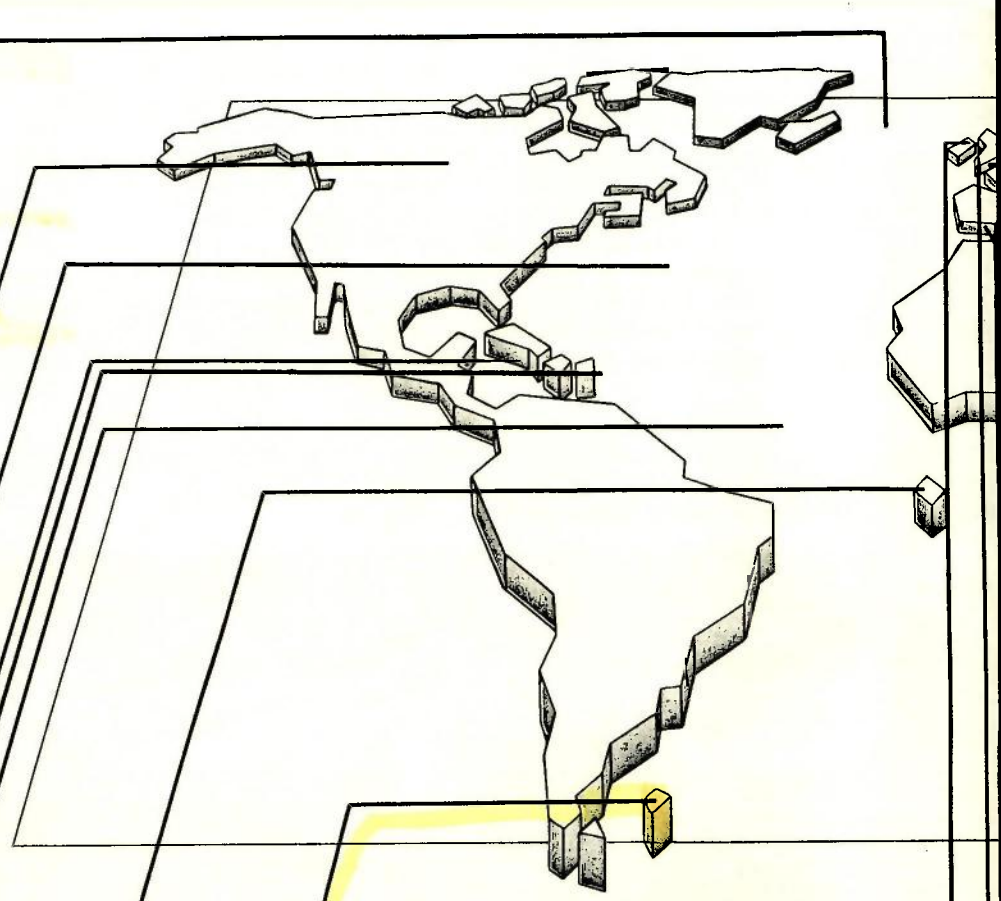
— **Maritime Forces** in the Eastern Atlantic and Channel areas. Our forces — ships, submarines and aircraft of the Royal Navy, and aircraft of the RAF — make a significant contribution to forward defence in the Norwegian Sea (see page 15), and to maritime operations in the Atlantic and shallow seas, where they would be primarily concerned to protect the deployment of our strategic deterrent and ensure the safe arrival of reinforcement and resupply shipping. The United Kingdom has the largest navy of any European NATO country and contributes some 70% of the ships available in these areas with the ability to deploy early at a time of tension or war.

Challenger main battle tank



303. We have described in detail in previous Statements how the Services carry out these roles. Their ability to do so is maintained by constant training and a full programme of exercises, both national and Alliance-wide. Last year, WINTEX-CIMEX, held in March, was the most wide-ranging of these exercises. It is a biennial command post (or paper) exercise designed to practise NATO's command and control procedures and to test the effectiveness of national crisis management organisations in times of increasing international tension or war. In the United Kingdom, our participation extended down to District Headquarters level.

Figure 4 Deployment of the Armed Forces, early 1988



EASTERN ATLANTIC and NORTH SEA

RN

Destroyers, Frigates, Submarines, RFAs, MCMVs, Offshore Patrol Vessels, SOV, Survey Vessels, Shore-based Wessex and Sea Kings.

RAF

Buccaneers, Canberras, Nimrods, Phantoms, Victors, VC10s.

CANADA

Army

Training Units.

RAF

Tornado Detachment.

WESTERN ATLANTIC

RN

Destroyers, Frigates, RFAs.

BELIZE

Army

1 Armd Recce Troop,
1 Field Artillery Battery,
1 Engineer Sqn,
1 Infantry Bn,
1 Flight AAC.

RAF

Harriers, Pumas, ½ RAF Regt Sqn (Rapier).

WEST INDIES

RN

Destroyer, Submarines, RFA.

CENTRAL ATLANTIC

RN

Survey vessel.

ASCENSION ISLAND

RAF

Hercules.

FALKLAND ISLANDS

RN

Submarines, Destroyers, Frigates, Survey Vessel, Offshore Patrol Vessel, RFAs, STUFT. Ice Patrol vessel.

Army

1 Infantry Bn Group, Supporting Arms and Services.

RAF

Phantoms, Hercules, Chinooks, Sea Kings, RAF Regt Sqn (Rapier).

NORTHERN IRELAND

RN

Patrol craft, RM Raiding Craft.

Army

HQ Northern Ireland,
2 Brigade HQs,
1 Engineer Sqn,
6 Resident Infantry Bns,
4 Roulement Infantry Bns (one may be RM Commando),
2 Sqns AAC,
9 Bns UDR.

RAF

Pumas, Wessex, RAF Regt Sqn.

GREAT BRITAIN

RN

ASW Carriers, Destroyers, Frigates, Submarines, MCMVs, Offshore Patrol Vessels, RFAs, Survey Vessels, Helicopters, Royal Marines Commando Forces, Royal Marines SBS, Royal Marines Forces for home defence.

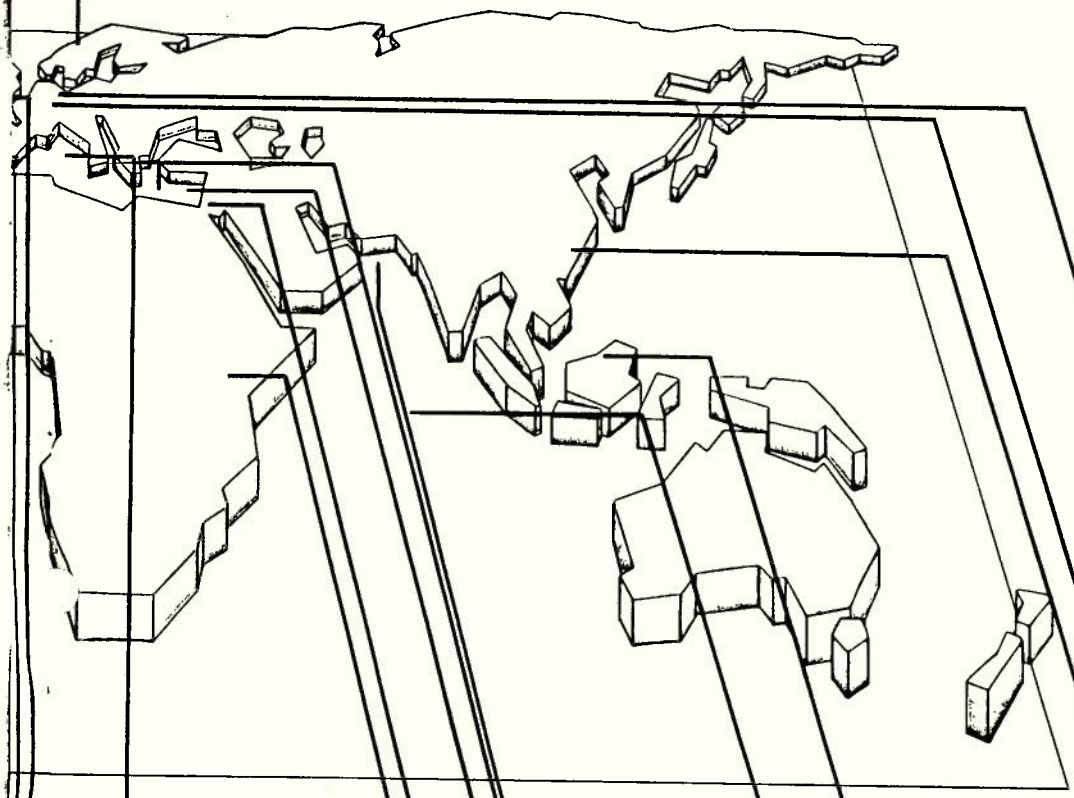
Army

Specialist Reinforcement Units for NATO, Reinforcements for BAOR, Forces for home defence, 1 SAS Regiment.

RAF

Andovers, Buccaneers, Canberras, Chinooks, Harriers, Hawks, Jaguars, Lightnings, Nimrods, Phantoms, Pumas, Hercules, VC10s, Sea Kings, Shackletons, Tornados GR1 & F3 Tristars, Victors, Wessex, communications aircraft & helicopters, Bloodhound, Rapier, Skyguard RAF Regt Sqn.

AAC	Army Air Corps	**HQ**	Headquarters	**Recce**	Reconnaissance
Armd	Armoured	**LPD**	Assault Ship	**Regt**	Regiment
ASW	Anti-Submarine Warfare	**MCMV**	Mine Countermeasures Vessel	**RFA**	Royal Fleet Auxiliary
BAOR	British Army of the Rhine	**MFO**	Multinational Force and Observers	**SAS**	Special Air Service
Bn	Battalion	**RE**	Royal Engineers	**SBS**	Special Boat Squadron



NORWAY (Exercises)

RN

RM Commando Brigade HQ,
2 RM Commandos with combat and logistic support,
Sea Kings and Wessex helicopters,
RM Assault Sqn.

Army

1 Infantry Bn Group.

RAF

Harriers, Jaguars,
Pumas, Chinooks.

BERLIN

Army

Infantry Brigade.

RAF

Support Units.

WEST GERMANY

Army (BAOR)

1 Corps HQ,
3 Armoured Divisions,
1 Artillery Brigade.

RAF Germany

Jaguars,
Tornados, Phantoms,
Harriers,
Andovers,
Pumas, Chinooks, Rapier,
RAF Regt Sqns.

HONG KONG

RN

Patrol Craft.

Army

1 Gurkha Engineer Regt,
1 UK Infantry Bn,
3 Gurkha Infantry Bns,
1 Squadron AAC.

RAF

1 Wessex Sqn.

SARDINIA

RAF

Phantom, Harrier, Tornado, Jaguar and Hawk detachments.

CHANNEL

RN

Destroyers, Frigates,
Submarines, MCMVs,
Offshore Patrol Vessels,
RFAs,
Shore-based Wessex and Sea Kings.

RAF

Canberras, Nimrods.

GIBRALTAR

RN

Frigate, Lynx.

Army

1 Infantry Bn.

RAF

Airbase detachments.

CYPRUS

Army

1 Armd Recce Sqn,
1 Engineer Support Sqn,
1½ Infantry Bns,
1 Flight AAC.

RAF

1 Wessex Sqn,
1 RAF Regt Sqn,
Phantom and Tornado training detachments.

UNFICYP Contingent

1 Armd Recce Sqn,
½ Infantry Bn,
1 Flight AAC,
Supporting Services.

SINAI

MFO Detachment.

KENYA (Exercise)

Army

1 Engineer Sqn.

BRUNEI

Army

1 Gurkha Infantry Bn,
1 Flight AAC.

DIEGO GARCIA

RN

Naval Party,
RM Detachment.

THE GULF

RN

Destroyers, Frigates, RFAs,
MCMVs,
MCM Command Ship.

MEDITERRANEAN

ASW Carrier,
Destroyers,
Submarines.

SOV	Seabed Operations Vessel
Sqn	Squadron
STUFT	Ships Taken Up From Trade
UDR	Ulster Defence Regiment
UNFICYP	United Nations Force in Cyprus

Note: This map does not include 566 loan service personnel deployed worldwide

Mine Countermeasures in Home Waters

1. One of the more serious threats to shipping around our ports and anchorages in wartime would come from the modern sea mine, which, if not countered, could affect the deployment of our Polaris submarines and endanger the safety of shipping carrying vital reinforcements and supplies.

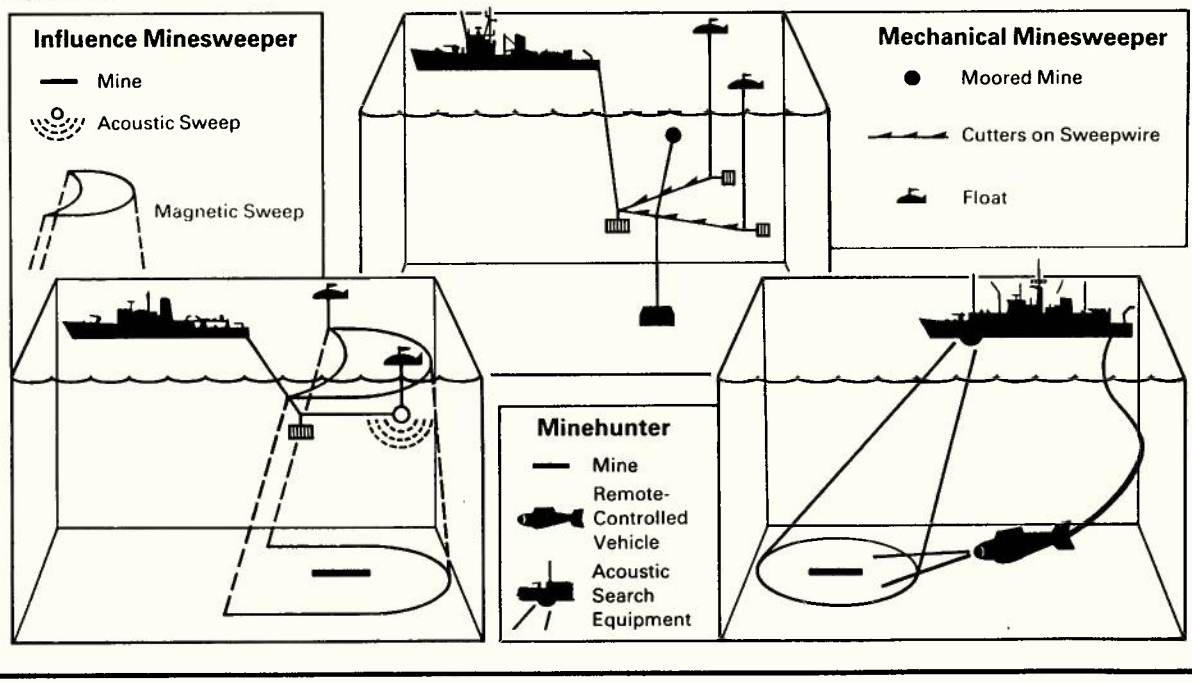
2. Today's mines come in several forms. The influence mine is equipped with sensor mechanisms designed to detect such characteristics as the underwater acoustic, magnetic or pressure signatures (either singly or in combination) of potential ship targets. The contact mine is designed to explode when it touches a ship's hull. Mines can also be designed to lie on the sea bed (ground mines) or at a predetermined depth, tethered by a wire to the sea bed (moored mines). Variants exist that can propel themselves upwards to explode under passing vessels.

3. The Royal Navy deals with the mining threat either by hunting or by sweeping; the choice depends on the type of mine expected. Minehunters (the Hunt or new Sandown class vessels) are equipped with high definition underwater acoustic search equipment, which generates an electronic image of the sea bed, including objects lying proud of it. Once a mine-like object has been detected, it is identified using a remote-controlled vehicle launched from the minehunter. This process can deal with all mines and does not rely on knowing how any individual mine is designed to work. The mines can either be destroyed or, in some cases, recovered for examination.

4. Minesweepers (the Hunt again or River class) can destroy mines by either influence or mechanical sweeps. The influence minesweeper uses equipment, normally towed, which generates underwater acoustic or magnetic signals (singly or in combination) that mimic those of a ship and deceive influence mines into exploding. Mechanical minesweepers are equipped with specially designed steel wires, which are towed through the water, astern and either side of the vessel, to sever the tethering wire of moored mines. The mine either then explodes or can be destroyed when it rises to the surface.

5. The RNR makes an important contribution to our mine countermeasures capability, manning 11 of the 12 River class minesweepers in the Fleet. These low-cost vessels are specially designed for minesweeping in deeper waters. The RNR also provides crews for other vessels, such as trawlers, that in wartime would be taken up from trade for mine countermeasures purposes.

Figure 5



304. **The defence of the United Kingdom** involves the Services in regular training for their tasks. In addition, in 1987 the Royal Navy tested its mine countermeasures capability in several exercises with NATO partners. The Army reviewed plans during WINTEX-CIMEX for the mobilization and deployment of Regular, TA and HSF troops, in preparation for a series of exercises to be held in Autumn 1988 to test current plans. Studies were also carried out into the use of helicopters, command and control, and logistics in support of military home defence operations. All aspects of our air defence system are exercised regularly; in April 1988, for example, some 1,200 sorties were flown by other NATO aircraft, testing our air defences during the nationwide Exercise ELDER FOREST. On average RAF fighters scramble three or four times each week to intercept and identify aircraft entering the United Kingdom Air Defence Region (UKADR).

Air Defence of the United Kingdom

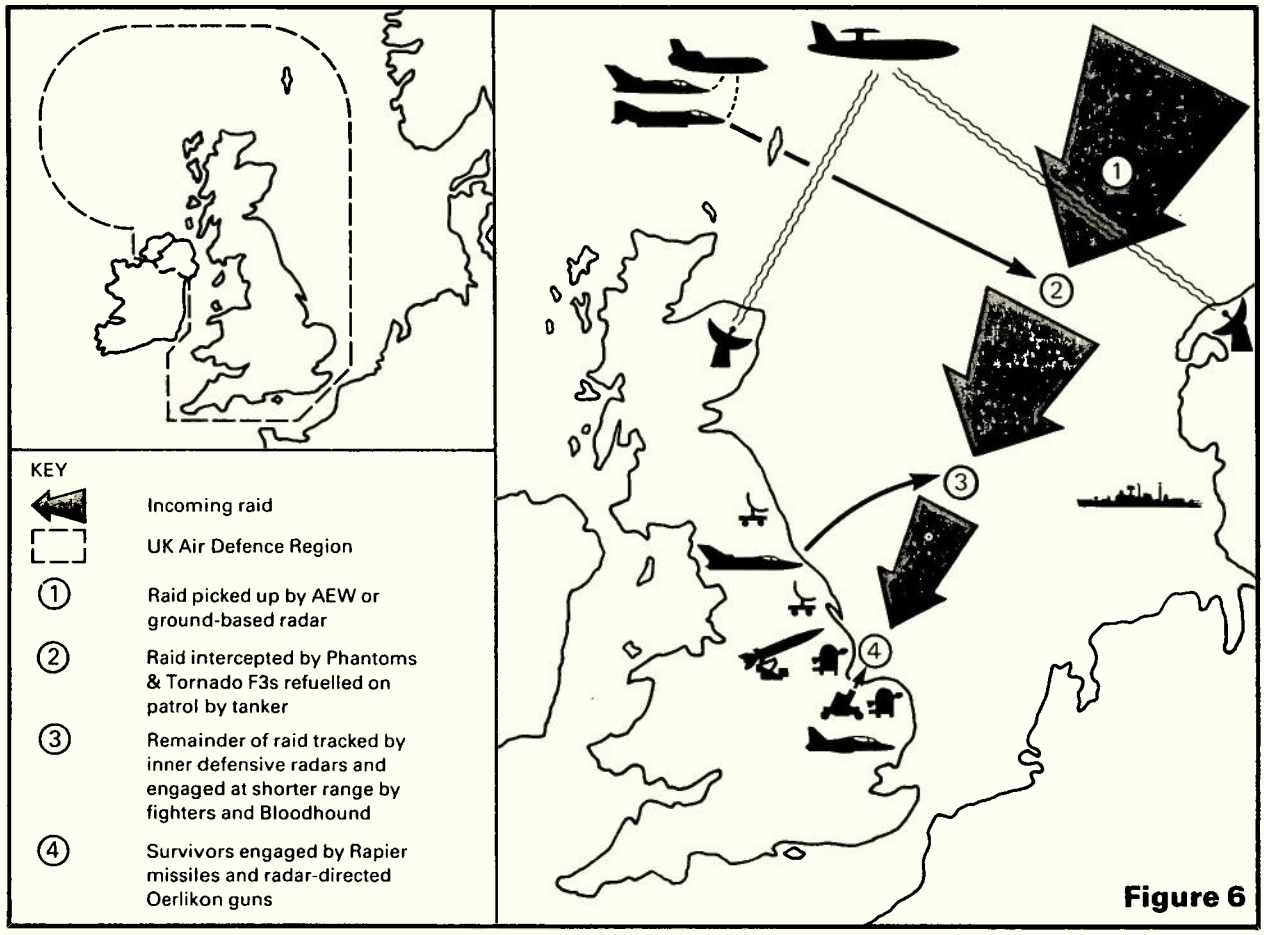


Figure 6

1. The strategic position of the British Isles ensures that, in the event of a major conflict between East and West, we would be a prime target for attack. The destruction of our air defence assets, including aircraft, airfields and radar sites, would be among the enemy's first priorities as he sought to gain air superiority. Responsibility for the air defence of the United Kingdom rests with RAF Strike Command, which maintains a constant radar watch over the air and sea approaches to the United Kingdom, and holds aircraft on ground alert at all times ready to scramble and intercept unwelcome intruders into the UKADR. In time of tension or war, continuous combat air patrols would be flown. Royal Navy ships with an air defence capability also contribute to our defences.

2. In the event of conflict, NATO's own offensive operations could be expected to reduce the enemy's ability to attack the United Kingdom by destroying his airfields and aircraft on the ground. But a substantial threat would remain from long-range bombers, some equipped with stand-off weapons. To deal with this, the RAF has developed the sophisticated system of layered defences illustrated above. The first line of defence aims to detect and intercept hostile aircraft entering NATO airspace, destroying them before they approach their targets. In order to deploy these defences swiftly and effectively, a comprehensive NATO-wide command, control and communications system is vital. As part of this a new system, known as the improved United Kingdom Air Defence Ground Environment, will soon be operational, receiving information from a new generation of transportable radars; and airborne early warning will be much improved from 1991 onwards as the seven Boeing E-3s on order enter service.

3. The responsibility for initial engagement of enemy aircraft would lie with the Tornado F3, armed with Skyflash medium-range and Sidewinder short-range air-to-air missiles. Two squadrons have been formed during the last year, and all seven squadrons will have entered service by the early 1990s. Supporting the Tornados would be two squadrons of Phantoms armed with Skyflash and Sidewinder, and an inner shield of Hawk aircraft equipped with Sidewinder. Air-to-air refuelling would enable most of our fighters to remain longer on patrol and operate further from their bases.

4. Enemy aircraft that penetrated the outer defensive screen would additionally face attack by Bloodhound surface-to-air medium-range missiles; if they still survived they would be engaged by the shorter-range Rapier missiles and radar-directed Oerlikon guns that protect our most important airfields. In addition, passive measures, such as placing aircraft on the ground in hardened shelters and dispersing key assets, would help to reduce the damage inflicted. On the ground, defence of our air bases from terrorists or enemy special forces would be provided by RAF Regular personnel and six squadrons of the R Aux AF Regiment.

Air Mobility

1. Warsaw Pact military doctrine (see page 5) relies on the concentration of massive force to overwhelm defending forces and achieve a breakthrough. To counter this threat, NORTHAG devised its concept of flexible operations (see page 15). A key element of this is the ability to counter enemy forces, particularly their armoured formations, should they penetrate NATO's front line, using mobile reserves with a powerful anti-tank capability.

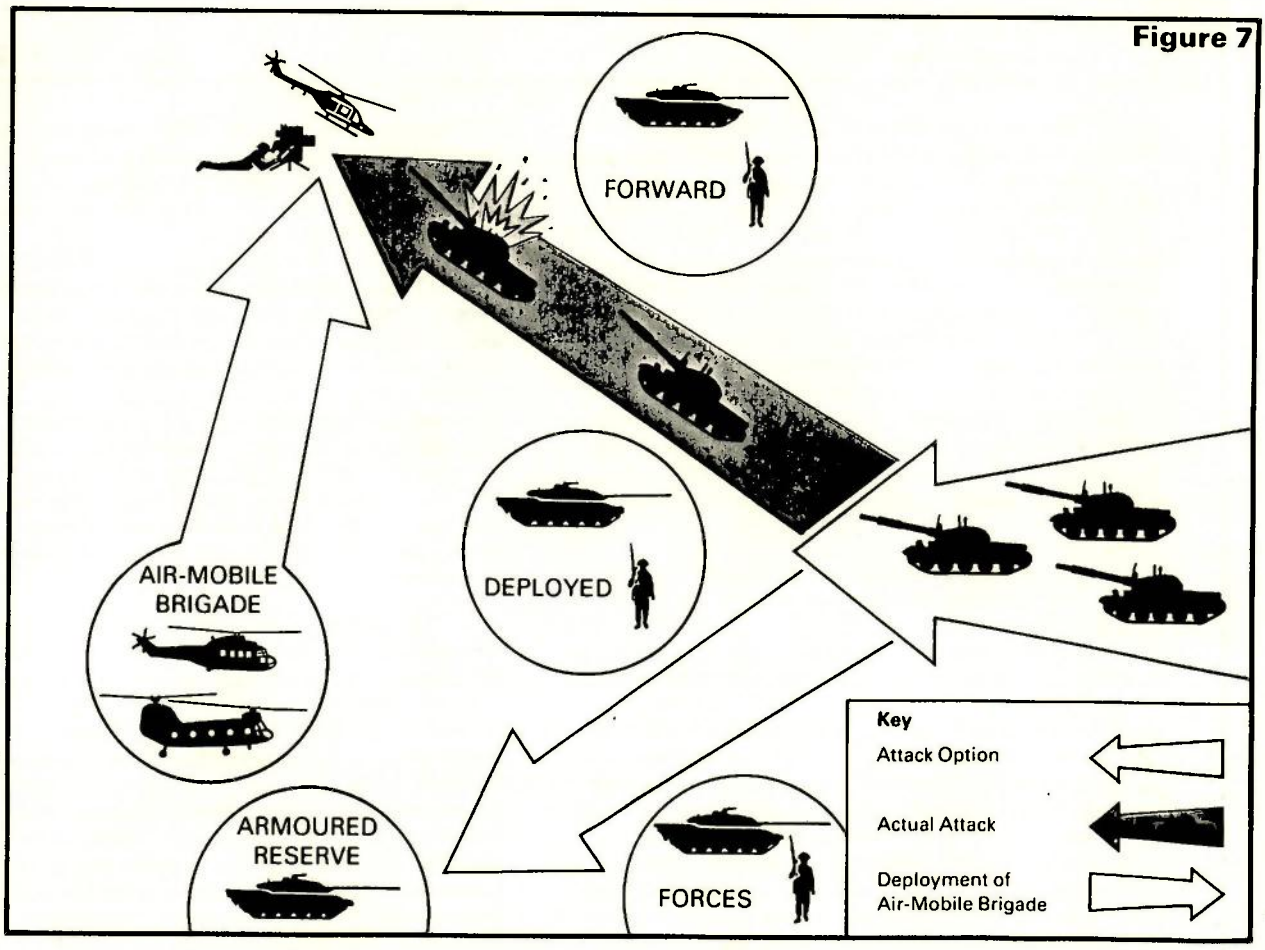
2. Helicopter-borne forces are ideal for this purpose. The axis of an enemy advance would not be known until very shortly before his attack began. Until then the defending forces would be faced with several possible lines of attack; and the task of identifying the main axis of advance would be made more difficult by the enemy's use of feints and deception to disguise his intentions. To be effective, allied armoured reserves would have to be committed early to the battle, possibly before the enemy's intention was clear, whereas air-mobile forces could be held back and moved swiftly into position when required.

3. In 1984, 6 Brigade of 1(BR) Corps, based at Soest, was tasked with conducting trials of a doctrine for air-mobile operations in close cooperation with the RAF. The doctrine, as developed, involved the use of RAF Puma and Chinook helicopters to move men and equipment into concealed positions behind the NATO front line at the point where an imminent enemy breakthrough had been identified. The infantry would be armed with Milan — the Army's medium-range man-portable anti-tank system. They would be supported by Lynx helicopters of the Army Air Corps, armed with TOW — the longer-range wire-guided anti-tank missile. The considerable anti-tank power of these combined forces would be brought to bear on the enemy as he breached the allied front line. Their aim would be to disrupt and halt the advance of his armour, allowing time for allied armour to move in and complete the destruction of enemy formations or compel him to retreat.

4. The success of this trial over the past four years has produced a doctrine for air-mobile operations, and identified procedures and equipment, which will allow these operations to be developed into the next century.

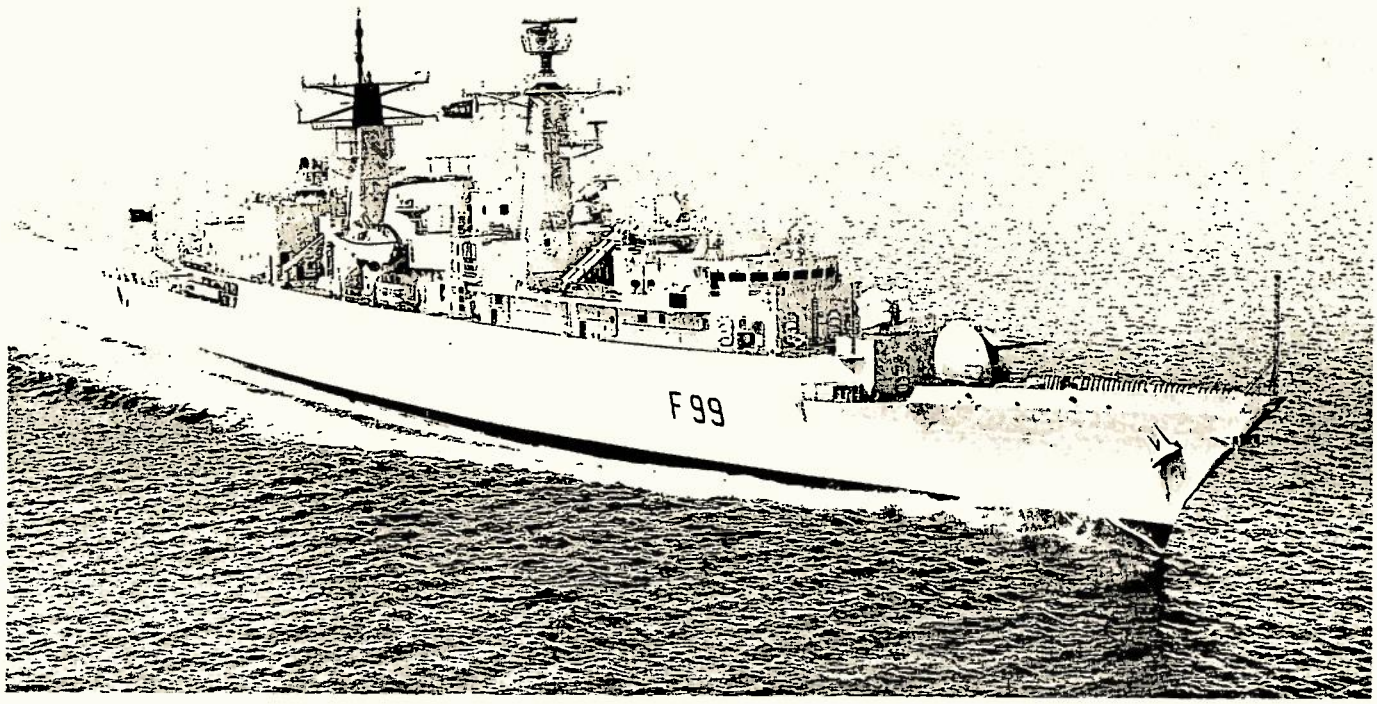
5. This year, 24 Brigade will begin conversion to the air-mobile role in place of 6 Brigade; it will include an Army Air Corps regiment equipped with both anti-tank and utility Lynx helicopters supported by the RAF's troop-carrying and heavy-lift helicopters. The EH101 is intended to succeed the Puma in these roles in the 1990s.

Figure 7



305. **The defence of the European mainland** requires an intensive annual programme to test Alliance forces both in their operational roles and in the complex task of reinforcement from the home base. The major exercise of the year was REFORGER in Autumn 1987, in which troops of the III (US) Corps deployed from the United States to the Central Region and subsequently, in Exercise CERTAIN STRIKE, practised plans and procedures for operations in the NORTHAG area; the United Kingdom's 4th Armoured Brigade and other troops from 1(BR) Corps also participated. In October 1987, the United Kingdom-based 2nd Infantry Division, comprising 19,000 personnel including TA elements, was deployed by RAF transport aircraft and by sea for Exercise KEYSTONE. Once in theatre, the deployed forces joined elements from 1(BR) Corps and troops from the Federal Republic and Belgium to undertake combined defence and counter-attack operations against air-landed and mechanised forces. The main part of the exercise involved over 32,000 troops and, under the terms of the Stockholm Document (see paragraph 211), was witnessed by 39 observers from 17 signatory countries. The training that the RAF carries out for its operational role on the Central Front is described on page 30. In October 1987, air defence Phantoms from RAF Germany took part in Exercise RED FLAG in Nevada for the first time; the excellent training available in this exercise closely resembles possible Central Front scenarios. Between January and March 1988, both the United Kingdom and Netherlands Amphibious Force and the British forces that form part of the AMF carried out annual arctic warfare training in Norway.

306. Our **maritime** forces have also maintained a high level of activity. In August and September 1987, the Royal Navy contributed 20 warships and Royal Fleet Auxiliaries to OCEAN SAFARI, one of an annual series of NATO maritime exercises in the north and mid-Atlantic. RAF Phantoms were deployed to the forward operating base at RAF Stornoway, and Buccaneer and Canberra aircraft undertook maritime operations, supported by VC10 and Tristar tankers. In all, over 150 ships and 250 aircraft took part from 11 countries. The main purpose of the exercise was to practise the protection of reinforcement and convoy shipping. This involved the assembly and escort of four convoys from the Canary Islands to the south coast of England; forward anti-submarine warfare (ASW) defence was also practised in the Norwegian Sea. Apart from such set-piece exercises, every ship and submarine of the Royal Navy, when new or emerging from refit, undergoes a rigorous period of training at Portland or on the Clyde before undertaking operational duties; and, once operational, vessels periodically return for shorter periods of such training to ensure that they remain as effective as possible. Other NATO nations also regularly carry out sea training at Portland, and take part in joint Royal Navy and RAF maritime exercises around the British Isles. The Royal Navy continues to maintain its commitments to the Standing Naval Force Atlantic, Standing Naval Force Channel and Naval On-Call Force Mediterranean. The RAF again demonstrated its excellence in ASW by winning, for the second successive year, the Fincastle Competition held between maritime patrol squadrons from Australia, Canada, the United Kingdom and New Zealand.



HMS *Cornwall*, Type 22 Batch 3 frigate, undergoing trials

307. The programme for the remainder of 1988 sees this pattern continuing and units from all three Services will participate in land, sea and air exercises in the NATO area. In May, for instance, RAF Nimrods and a Commando Group of the Royal Marines (the latter embarked in two Landing Ships Logistic (LSL) and HMS *Intrepid)* will take part in the amphibious phase of Exercise DRAGON HAMMER in the western Mediterranean. And in September, units from the Royal Navy, Royal Marines and the RAF will join forces from nine other NATO nations in the major maritime and amphibious exercise, TEAMWORK 88, in the Eastern Atlantic and the Norwegian Sea; the UKMF with RAF support will take part in Exercise BOLD GROUSE in the Zealand area of Denmark; and British elements of the AMF will deploy to Turkey for Exercise ALLY EXPRESS. In the United Kingdom, there will be a number of individual regional Military Home Defence exercises in the Autumn.

THE ROYAL NAVY

308. The Royal Navy's current strength is described at Annex A, and recent additions to its equipment programme are set out in Table 1. Progress in the Trident programme is described on page 40.

309. The programme to modernise our conventional naval forces is proceeding well. The final three Trafalgar class nuclear-powered Fleet submarines are being built or undergoing trials (including HMS *Trenchant,* scheduled to enter service later this year), as are the first four of the new Upholder class conventionally-powered patrol submarines. The first of the latter class, HMS *Upholder,* is to enter service in this financial year. The Government remains committed to maintaining an escort force of about 50 frigates and destroyers: we have invited tenders for up to four more Type 23 frigates in addition to the four already

Table 1 Royal Navy Equipment

	Numbers brought into service 1987-88	Numbers ordered 1987-88	
Submarines			
Trident Submarines	—	1	
Frigates			
Type 22	2	—	
MCMVs			
Hunt Class	1	—	
Sandown Class	—	4	
Auxiliaries			
Auxiliary Oiler Replenishment Vessel	—	1	
Landing Ship Logistic	1	—	
Aviation Training Ship	1	—	
Naval Aircraft			
Sea King Mk4	—	3	
Sea King Mk6	—	4	

Other Naval equipment ordered in 1987-88

Sonar 2074	Order for hull-mounted sonar for Submarines
GWS 26 Mod 2	Development and production of Lightweight Seawolf

on order, and work continues on the four Type 22 frigates currently being built. Orders were placed last summer for the next four Sandown class single-role minehunters as part of the continuing modernisation of our mine countermeasures capability, which has seen 25 vessels ordered since 1979.

310. Contracts were also placed last summer for feasibility studies into the option of replacing the assault ships *Fearless* and *Intrepid* with new ships, thus maintaining our amphibious capability in the longer term. We shall assess the results of these studies, along with the completed study on the ship-life extension option, in good time to decide what to do when *Fearless* and *Intrepid* reach the end of their current useful lives in the mid-1990s. The purpose-built LSL, RFA *Sir Galahad*, whose predecessor was lost in the Falklands campaign, joined the Fleet last November and immediately participated in her first beach landing in Exercise PURPLE WARRIOR (see page 33). The air-training ship *Argus* should complete her trials and enter operational service later this year. Construction of the first Auxiliary Oiler Replenishment vessel has started and an order was placed for the second last December. Stocks of fuel, spares, stores and most weapons and types of ammunition meet NATO requirements in full; and, for example where new weapons have been brought into service or requirements have been increased, plans exist to eliminate shortfalls.

THE ARMY

311. The Army's current strength is given at Annex B. Details of its equipment programme over the last year are in Table 2.

312. New equipment for the Army continues to enter service. In the last year BAOR received its fifth regiment of Challenger tanks, and the first battalion's-worth of the new Warrior mechanised infantry combat vehicle. Three further battalions'-worth of the Saxon armoured personnel carrier have also been delivered. From April 1988, 24 Brigade began to take over the air-mobile role from 6 Brigade (see page 24), which will revert to a mechanised role and will consist of an additional Challenger-equipped armoured regiment and two infantry battalions mounted in Warrior. The introduction of the new SA 80 infantry weapons, the S10 respirator and battlefield thermal-imaging equipment continues and the new LAW 80 man-portable anti-tank weapon is entering service this year. Looking further ahead a third air defence missile regiment is to be formed, equipped with the new Starstreak high velocity missile (HVM) system, while existing towed Rapier fire-units will be replaced with the advanced Rapier 2000. Other major new equipment under order for deployment in the next few years includes the Multiple-Launch Rocket System (MLRS), the Phoenix remotely-piloted air vehicle, and the new Challenger armoured repair and recovery vehicle.

Lynx helicopter with TOW

313. This new equipment represents a major advance in the Army's operational capabilities. It will increase the mobility and firepower of the infantry and mechanised units, improve the Royal Artillery's indirect fire capability, and provide protection against a wide range of chemical and conventional threats from the air. In addition, the Army devotes substantial resources to ensuring adequate supplies of war materiel, including fuel, ammunition and spares, for sustained combat.

Table 2 Army Equipment

	Numbers brought into service 1987-88	Numbers ordered 1987-88	
Tanks			
Challenger	1 regiment	—	
Night Observation and Gunnery Sight	4 regiments equivalent	5 regiments equivalent	
Armoured Personnel Carriers			
Warrior	1 battalion	—	
Saxon	3 battalions[1]	—	
Helicopters			
Lynx Mk 7 (armed with TOW)	2	—	
Air Defence			
Javelin	4 batteries	—	
Air Defence Alerting Device (to equip Javelin/HVM)	—	Full requirement[2]	
Infantry Weapons			
LAW 80 (Light Anti-Armour Weapon)	Initial batch	—	
SA80	40,000	157,000	
SA80 Night Sight and 3rd Generation Image-Intensifier Tubes	Initial quantities of night sight	2,000	
Electronic Warfare			
Electronic Warfare System	—	1 system	
Nuclear, Biological and Chemical Defence			
General Service Respirator S10	—	balance of requirement[2]	
Chemical Agent Monitor	—	balance of requirement[2]	

Notes

[1] Includes 1 Battalion brought into service during 1986-87 but not reported in last year's Statement.

[2] Numbers not given for reasons of security.

THE RAF

314. The RAF's major equipment modernisation programme continues (see Table 3). Its current strength is shown in Annex C.

315. In the last year, we have ordered an additional Boeing E-3 airborne early warning aircraft to supplement the six ordered previously. This will provide the RAF with a robust capability to mount continuous airborne early-warning patrols. We have also recently placed a production contract for 34 more Harrier GR5 aircraft —in addition to the 62 already on order — to sustain the force into the 1990s. Although there have been some delays as a result of the loss of an aircraft in October 1987 and technical difficulties, the first squadron should form later this year, representing a substantial improvement over the existing GR3. A programme for the provision of a night and poor weather capability is also under way.

316. The first two squadrons of Tornado F3, equipped with Foxhunter radar to an agreed interim standard, formed during the year and are already providing a capability superior to that of the aircraft they replace. A revised fixed-price contract has now been agreed with the contractor to bring the radar up to the required standard. In addition, 2729 (City of Lincoln) Squadron of the R Aux AF Regiment, equipped with ex-Argentinian Oerlikon guns directed by all-weather Skyguard radars, has been declared operational. Two Tucano aircraft, the new basic trainer for the RAF, have been delivered for trials. The ability of our front-line airfields in RAF Germany to continue to operate during wartime will be considerably enhanced by the redeployment from the United Kingdom of a squadron of Royal Engineers for airfield damage repair in 1989.

317. We have placed an order for the Boxer 2 communications bearer system, which will provide a nation-wide secure and survivable communications system using new fibre-optic technology. We have also reached agreement with the prime contractor on how to proceed with ALARM, the advanced anti-radar missile to be carried by Tornado GR1 aircraft. The prime contractor is satisfied with the initial performance of the new rocket motor and the programme will now proceed to completion. The RAF already meets NATO requirements for virtually all warstocks and has plans to remove remaining shortfalls.

FLIGHT SAFETY

318. Each year, the RAF flies sorties all over the world in many different types of aircraft, including Hercules, VC10 transports, Puma helicopters and Tornado fast jets. Flights range from low-level fast-jet training and search and rescue operations to troop and logistic transport. Despite operating in an increasingly demanding environment, the RAF's flight safety record has improved steadily. Since 1981, the accident rate has been almost halved, and in 1987 it was the lowest in the Service's history, there being fewer than one major accident for every 35,000 hours flown (see Volume 2, Table 5.8).

Table 3 Royal Air Force Equipment

Aircraft	Numbers brought into service 1987-88	Numbers ordered 1987-88	
Tornado ADV (Air Defence)	37	—	
Harrier GR5 (Offensive Support)	—	34	
Boeing E-3 (Airborne Early Warning)	—	1	

Other RAF equipment ordered in 1987-88

Boxer 2 Communications Bearer System

THE MERCHANT FLEET

319. The Government is continuing to monitor the number of merchant vessels on the United Kingdom and dependent territory registers that are available to meet the needs of the armed forces in wartime. Despite the recent decline, numbers are still sufficient for these needs. NATO has agreed to our proposal for a study of the Alliance's ability to meet its needs in time of emergency and war; this is expected to start shortly.

320. Last year's Statement described the steps being taken to ensure the availability of crews for vessels requisitioned in an emergency. For this purpose, the Merchant Shipping Bill, introduced last October, contained provisions enabling the Government both to provide financial assistance for the training and travel costs of British merchant seamen and to establish a Merchant Navy Reserve.

Low-Flying Training

1. For deterrence to be effective, our aircraft have to be capable of retaliating against targets deep inside enemy territory, penetrating sophisticated and integrated enemy radar and defensive systems. For the present, the best way of avoiding both detection and interception is to fly as close to the ground and as fast as possible, using the terrain to mask our aircraft from enemy radar.

2. The techniques of low flying over land, however, demand great skill, which can only be acquired by long and careful training, and maintained by constant practice. The acquisition of this skill cannot be left until it is needed operationally. The need for low-flying training has, therefore, been recognised as a vital part of RAF operational doctrine for 25 years or more and is expected to continue into the foreseeable future. Although there has been some increase in this training in recent years, largely as a result of the introduction of the Tornado GR1 aircraft, we expect the level of activity to remain fairly constant from now on.

3. We take great care, however, to limit the nuisance to the public caused by low-flying aircraft, and we shall continue to do so.

4. In war, aircraft would fly as fast and as low as possible — in the Falklands conflict aircraft often needed to fly below 100 ft and at speeds of over 600 mph. But most low-flying training in this country is restricted to 450 mph and above 250 ft. Training at lower altitudes is mainly undertaken in virtually unpopulated parts of the United States and Canada, where we practise down to a level of 100 ft, and participate in exercises that involve flying below 250 ft. Only a very little such flying, mainly essential work-up training for these exercises, is carried out in the United Kingdom, in three sparsely populated areas in northern Scotland, the Scottish Borders and central Wales.

5. Unfortunately, it is not possible to reduce low-flying training in this country below its current level without damaging the RAF's operational capability. There is also a limit to how much can be done abroad, not only because that is expensive and wasteful of pilot training time in transit, but also because there is no substitute for training in Europe over the sort of terrain that aircrews would encounter in the event of conflict.

NORTHERN IRELAND

321. The security policy in Northern Ireland, which has been followed by successive Governments, is to fight terrorism with all appropriate resources under the rule of law. The Government is determined to pursue its efforts to restore peace and order in the Province. In the past year terrorist violence has continued; the IRA's Remembrance Sunday bombing at Enniskillen, and the scale of recent arms finds on both sides of the border, underline the nature of the continued terrorist threat. The Army is deployed in Northern Ireland to support the Royal Ulster Constabulary (RUC) in combating that threat; and this remains the Service's most important national peace-time operational commitment.

322. The Ulster Defence Regiment (UDR) now has responsibility for the military element of security in 85% of Northern Ireland. It has nevertheless been necessary to retain ten major units in the infantry role in the Province; their wide range of activities in support of the RUC includes patrolling, manning vehicle check points and guarding buildings. Following a review of the deployment of the security forces in the Province, the Government announced, in January 1988, the establishment of an additional brigade headquarters to support the RUC in the border areas, to improve our counter-terrorist capability there. The remaining forces will continue to support the RUC in the rest of the Province. This reorganisation will not involve any increase in major units deployed in Northern Ireland.

323. The Royal Navy, which carries out patrols to prevent arms smuggling, and the RAF, in a wide range of air-support tasks, also make substantial contributions. The Royal Marines continue to support both Army and Navy operations in the Province.

324. Despite the dedication and professionalism of the security forces, 1987 sadly saw no diminution in the price they have paid. Eleven soldiers were killed, including eight members of the UDR, and a further 101 Servicemen were injured. All eight UDR members were murdered while off duty. Eighty-eight awards for gallantry were made during the year, in recognition the heroism of these Servicemen and women.

325. The security forces have made steady progress in bringing terrorists to justice and in seizing arms and explosives. During 1987, a total of 468 people were charged with serious offences, including 28 with murder, and 679 people were convicted of offences related to terrorism. In the same period 267 weapons and almost 20,000 rounds of ammunition were seized. In 1987, the Royal Army Ordnance Corps' Explosive Ordnance Disposal (EOD) teams responded to over 1,300 calls; 148 bombs were made safe; and nearly ten tonnes of explosives were found or neutralised, the highest total since 1976.

OUT-OF-AREA COMMITMENTS

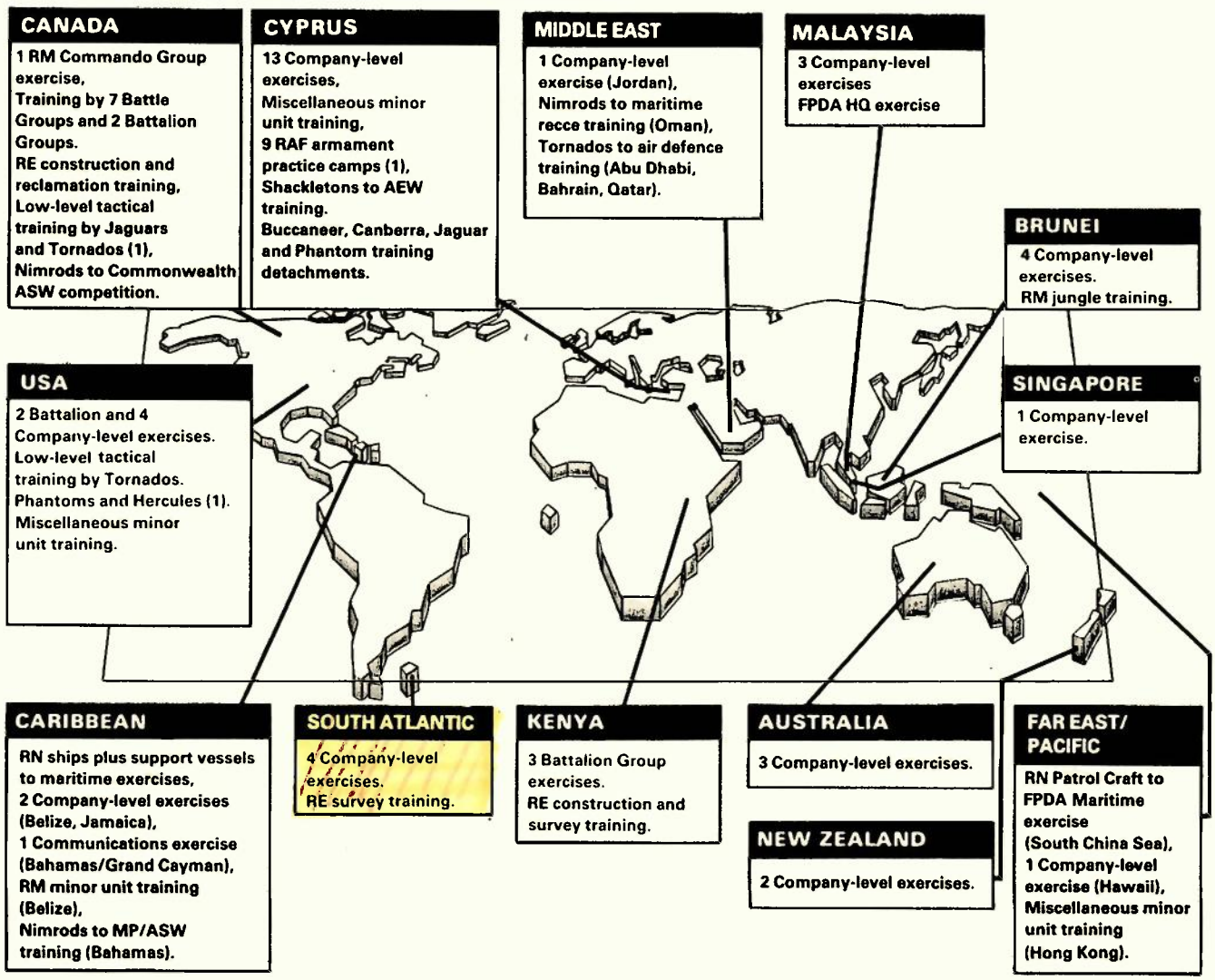
326. During the past 12 months there have been few major changes to our deployments outside the NATO area, apart from the increase in the contribution made by the Royal Navy to the protection of our merchant shipping in the Gulf (see page 35).

327. We continue to keep **permanent garrisons** in the Falkland Islands, Hong Kong, Belize, Brunei and the Sovereign Base Areas of Cyprus. Force levels in the **Falklands** are unchanged since last year, but remain under regular review. In **Hong Kong,** we shall remain responsible for the defence and internal security of the territory until 1997. We have yet to formulate final plans for the phased withdrawal of the garrison as 1997 approaches; all decisions will be taken in consultation with the Hong Kong Government. In a routine adjustment of force levels, two of the five Hong Kong patrol craft and 3 Raiding Squadron Royal Marines are being withdrawn from the territory during 1988. The force levels and duties of British forces in **Brunei, Belize** and **Cyprus** are unchanged.

328. We regularly exercise our out-of-area capability. PURPLE WARRIOR, in November 1987, was the largest amphibious exercise mounted by the United Kingdom since 1945 (see below). Exercise FIRE FOCUS, in March 1988, rehearsed our capability for rapid reinforcement of the Falkland Islands; the RAF flew some 600 troops and support personnel to the Islands and deployed four Phantom and one Nimrod aircraft to augment other aircraft already there. The programme for the rest of 1988 includes two significant deployments to the Far East and the Pacific. A Royal Navy task group (OUTBACK 88) will take part in a number of exercises in the region, including, in July, the Five Power Defence Arrangements (FPDA) naval exercise, STARFISH, in the South China Sea; and, in September, a combined exercise, SETIA KAWAN, in Brunei, which will also involve British troops from Hong Kong and the armed forces of the Sultan of Brunei. RAF Tornados, supported by a Tristar tanker aircraft, will be deployed from the United Kingdom to take part, in September, in the FPDA air defence exercise, LIMA BERSATU, which will also involve ships and Sea Harriers from the Royal Navy task group and forces from Australia, Malaysia, New Zealand and Singapore. The Tornados will then train with the Royal Thai Air Force and visit other countries in the region before joining the naval task group again to take part, with other Service representatives, in the Australian Bicentennial celebrations in October.

329. Our programme of **military assistance** overseas remains wide-ranging and much in demand; in 1986-87

Figure 8 Exercises outside Europe in 1987



Note

[1] These deployments were supported by RAF tanker aircraft

Table 4 Major Exercises in 1987

Name	Date	Type	Location	Service	Other Countries
ARCTIC WARFARE TRAINING	January-March	Theatre Training	Norway	RM/Army	Netherlands
CARIBTRAIN	January-April	Maritime	East Atlantic Caribbean	RN	France, Netherlands, United States
GREEN FLAG	February-April	Tactical Flying	USA	RAF	United States
WINTEX-CIMEX	March	Command Post	NATO-wide	Tri-Service	NATO
COLD WINTER 87	March	Field Training	Norway	Tri-Service	Netherlands, Norway
PURPLE WAVE 87	March-April	Command Post	UK Waters	Tri-Service	
WESTERN VORTEX	April-October	Tactical Flying	Canada	RAF	
ARDENT GROUND	April-May	Field Training	UK	Army/RAF	Belgium, Federal Republic of Germany, Italy, Luxembourg, Netherlands, United States
MEDICINE MAN	April-November	Field Training	Canada	Army	
MAPLE FLAG	April-May	Tactical Flying	Canada	RAF	Canada, United States
DRAGON HAMMER	May	Maritime/Air	Western Mediterranean	RN/RM/RAF	France, Italy, Netherlands, Turkey, United States
CENTRAL ENTERPRISE	June	Tactical Flying	NATO Central Region	RAF	Belgium, France, Federal Republic of Germany, Luxembourg, Netherlands
AURORA EXPRESS	June	Field Training	Turkey	Army/RAF	Belgium, Federal Republic of Germany, Italy, Luxembourg, Turkey, United States
VENDETTA	June	Submarine Training	Norwegian Sea	RN/RAF	Belgium, Canada, Federal Republic of Germany, Netherlands, Norway, United States
NICKEL MERCURY	June-July	Communications	Caribbean	Army/RAF	
ACCORD EXPRESS 87	August-September	Field Training	Denmark	Army/RAF	Belgium, Canada, Denmark, Federal Republic of Germany, Italy, Luxembourg, Netherlands, United States
OCEAN SAFARI	August-September	Maritime	East Atlantic	RN/RAF	Belgium, Canada, Denmark, France, Federal Republic of Germany, Netherlands, Norway, Portugal, Spain, United States
CERTAIN STRIKE	September	Field Training	Central Region	Army	Belgium, France, Federal Republic of Germany, Netherlands, United States
FINCASTLE	October	ASW Competition	Canada	RAF	Australia, Canada, New Zealand
KEYSTONE	October	Field Training	FRG	Army	Belgium, Federal Republic of Germany
RED FLAG	October-November	Tactical Flying	USA	RAF	United States
JOLLY ROGER	November	Submarine/Anti-Submarine Warfare Training	East Atlantic	RN/RAF	
PURPLE WARRIOR	November	Field Training	UK	Tri-Service	

over 600 Servicemen were on loan service in countries outside NATO, and over 3,700 students from such countries attended military training courses in Britain.

330. Our contribution to **international peacekeeping** forces has not changed: we provide contingents to the Multinational Force and Observers in Sinai and the United Nations (UN) forces in Cyprus; and the Cyprus Sovereign Base Areas give logistic support to the UN forces in Cyprus, Lebanon and on the Golan Heights.

Exercise PURPLE WARRIOR

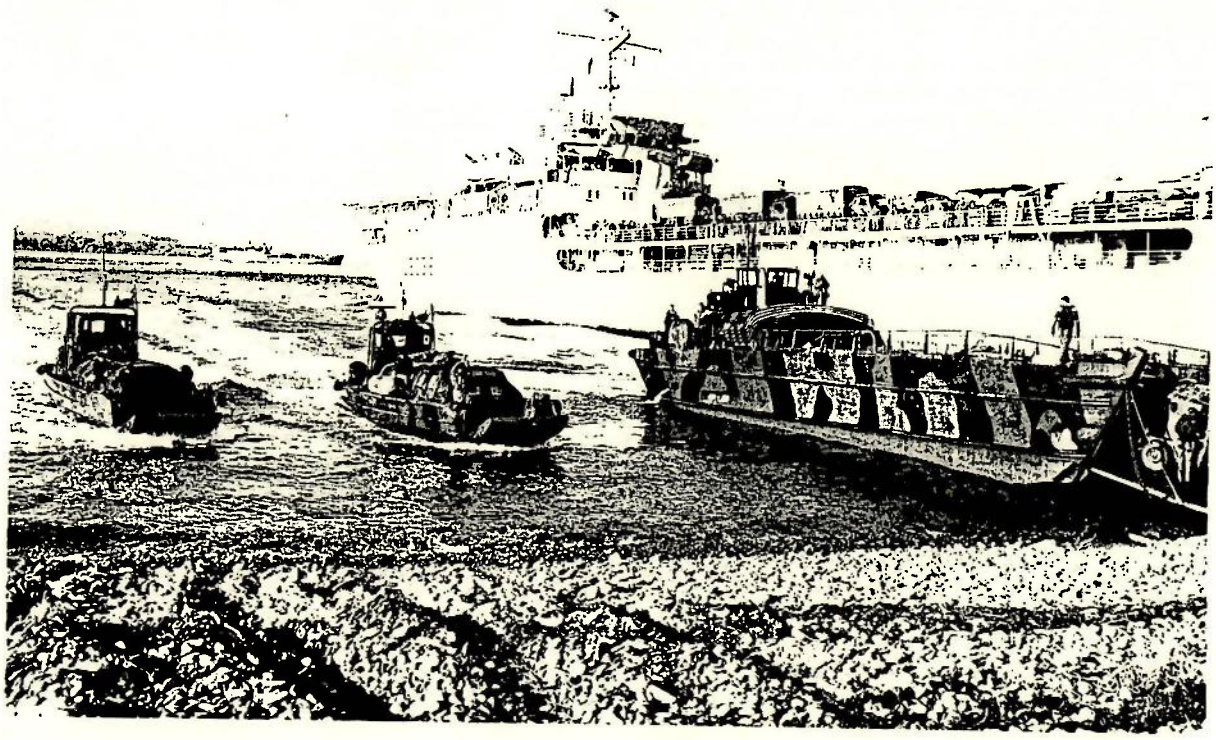
1. Exercise PURPLE WARRIOR, which was held in the Irish Sea and south-west Scotland in November last year, was the latest in a programme of exercises designed to develop our ability to react to a crisis outside the NATO area. On this occasion, south-west Scotland represented a notional state, in a group of islands some 1,500 nautical miles from the United Kingdom, entitled to our protection. The scenario assumed that the islands had come under attack from a powerful neighbour.

2. A force comprising 39 ships (including HM Ships *Ark Royal, Illustrious* and *Intrepid*) and two brigades (3 Commando Brigade Royal Marines and 5 Airborne Brigade) was assembled in southern England and deployed to the scene of conflict. On arrival, an amphibious operation was mounted in Loch Ryan to secure a beach-head for the landing of a Joint Force. Simultaneously, an airborne assault by the leading parachute Battalion Group of 5 Airborne Brigade, delivered by Hercules aircraft of the RAF air transport force, secured West Freugh airfield as a resupply and evacuation air-head. Once established on land, the Joint Force, supported by over 100 Royal Navy and RAF helicopters and fixed-wing aircraft, simulated the location and evacuation of British citizens, and went on to practise defensive and counter-attack operations to assist the local government to regain control.

3. The exercise, involving some 20,000 men, of whom approximately 10,000 were deployed ashore, was sufficiently large to require notification under the terms of the Stockholm Document (see paragraph 211).

4. The venture could not have succeeded without the generous cooperation of the people of Galloway, Arran and Kintyre, not least the farmers who agreed to the use of their land and the local volunteers who played 'evacuee'. Many valuable lessons about the conduct of joint Service operations were learnt.

Exercise PURPLE WARRIOR: the Joint Force lands on the shores of Loch Ryan



THE SERVICES AND THE COMMUNITY

Volunteer Reserves

331. The past year has seen our reserve forces continue to make a valuable and cost-effective contribution to our defence effort. The TA's strength is now over 25% greater than it was in 1979, and 43 out of the planned 47 companies of the HSF have been formed. In addition, the States of Jersey have agreed to fund a TA Royal Engineer Field Squadron, to be based on the island of Jersey, as their contribution to the defence of the British Isles. The R Aux AF and RAF Volunteer Reserve have expanded five-fold over the same period, and the viability of a support force similar to the TA's HSF is under trial. The RNR has increased by some 10% since plans for its expansion were announced at the end of 1984. The Royal Marines Reserve has increased by more than 60% since 1979. All our reserve forces would play an important role on mobilization and in war (see paragraph 302); the TA would provide more than 50,000 troops to BAOR, including two infantry brigades, as part of the reinforcement of 1(BR) Corps (see page 17).

332. The National Employer Liaison Committee was established in 1986 to provide independent advice to Ministers on measures needed to improve employers' support for the volunteer reserves. The committee has concluded that one of the main causes of turnover in these forces is the shortage of high quality officers needed to maintain the enthusiasm of subordinates, partly because employees find it difficult to take the necessary time off work. We are considering the committee's recommendation that a campaign be mounted to demonstrate to the public, and especially to employers, the benefit to be gained from staff whose leadership, management, specialist and technical skills are improved by military training at no cost to the employer.

Cadets

333. Altogether there are now almost 147,000 cadets, both boys and girls — some 22,000 in the Sea Cadet Corps and Sea Scouts, 44,000 in the Army Cadet Force, 39,000 in the Air Training Corps and 42,000 in the Combined Cadet Force. We are making the cadet forces more attractive for young people by, for example, overseas visits to Regular units, exchange visits with foreign cadet forces and adventurous training. In addition, 500 flying scholarships are awarded each year to male cadets and others who are keen to fly in the RAF, and up to 40 to cadets interested in flying with the Royal Navy.

334. About one-third of all officer recruits to the armed forces and two-fifths of other ranks are former cadets, while all cadets develop a lifelong understanding of the Services. Our aim is to ensure that even those who do not choose a career in the Services are helped to develop worthwhile interests and the values of good citizenship, thereby becoming more useful members of the community.

Bomb Disposal

335. During 1987, EOD teams of all three Services were called to investigate 4,312 incidents outside Northern Ireland (see paragraph 325). Of these 3,792 involved conventional munitions, 66 were terrorist bombs and 454 were false alarms or hoaxes. The discovery near Tower Bridge in June of a 1,000 kg bomb from the Second World War led to an operation lasting 32 hours and requiring the evacuation of 350 local residents. First World War chemical munitions, found buried at the ammunition depot at Bramley in Hampshire in September, were safely removed.

Search and Rescue

336. During 1987, the Ministry of Defence considered proposals for putting the search and rescue (SAR) service in the United Kingdom out to civilian contract. Studies have also been made into the redeployment of military helicopters to provide improved overall coverage. In February 1988, the Government announced that, wherever there is a military requirement for SAR, it will continue to be provided by the Royal Navy and the RAF, whose services will remain available to the wider civilian community.

337. In 1987, SAR helicopters of the Royal Navy and the RAF, and RAF mountain rescue teams, were called out 1,633 times and rescued or assisted a total of 926 people in and around the British Isles. These operations, supported as necessary by RAF Nimrod aircraft, were all guided by the RAF Rescue Coordination Centres at Edinburgh and Plymouth, working with HM Coastguard. An excellent illustration of this close cooperation was provided on 31 May when the Coastguard asked for help following a collision between the British supertanker *Skyron* and the Polish cargo ship *Hel*, east of Ramsgate. While an RAF Nimrod provided top cover, RAF Sea King and Wessex helicopters and a Royal Navy Sea King transported firemen to the *Hel*, which was ablaze, and stood by while the crew transferred to a waiting ferry and the fire was extinguished. The crew was then able to return to the ship, which continued its voyage to Amsterdam, while the RAF helicopters returned the firemen to land.

Disaster Relief

338. During 1987, the Services continued to provide disaster relief overseas and assistance to local communities in the United Kingdom:

- In the aftermath of the October gales in south England, the Army helped local authorities and water and electricity boards to restore services and clear debris. Generators and other emergency equipment were provided for hospitals, old peoples' homes and farms until services were restored. In the same month, the Army was also called on to provide an emergency fire service during a strike in West Glamorgan.

- Following Cyclone Sally in January, Queens Gurkha Engineers (QGE) were sent from Hong Kong to work in Aitutaki and Raratonga in the Cook Islands. They helped restore electrical power and repaired damaged roofs. Another team of QGE and Royal Engineers from the United Kingdom was sent to Vanuatu after Cyclone Uma in March, where they rebuilt a number of schools, carried out specialist electrical work and refurbished several government buildings. A Royal Engineer adviser and emergency relief stores were sent to Bermuda in September, to assist the authorities there in the aftermath of Hurricane Emily.

The ARMILLA Patrol

1. A continuous Royal Navy presence has been maintained in the Gulf and Indian Ocean area since the beginning of the conflict between Iraq and Iran in 1980, although it has featured widely in the news headlines only during the last 18 months.

2. Originally the ARMILLA patrol consisted of two warships (destroyers or frigates) with a support ship. Last year, however, attacks on neutral shipping in the Gulf increased, in turn stepping up the threat faced by British merchantmen in the area. A third warship was therefore assigned to the patrol in early 1987, to enable it to respond more flexibly to events in the region. At any one time, six destroyers or frigates are now either on patrol, on passage, or working up prior to deployment; this represents approximately one-eighth of all Royal Navy destroyers and frigates, or about one-sixth of those vessels normally available for routine peace-time deployments.

3. The United Kingdom is strictly impartial in the conflict between Iran and Iraq. The ARMILLA patrol provides discreet, low-profile reassurance and, where necessary, protection to merchant ships owned or registered in the United Kingdom or British dependent territories. Its presence also underscores the principle of freedom of navigation in international waters.

4. ARMILLA's operations are not provocative and are designed to reduce tension; but the Royal Navy warships engaged in this task are well prepared to exercise their right of self-defence, both for themselves if attacked, and for merchantmen under their protection. In addition, ARMILLA ships provide humanitarian assistance, in accordance with international law, to any distressed or damaged vessels, regardless of nationality, when human lives are at risk.

5. ARMILLA accompanies most British merchant shipping through the most threatened areas, the southern Gulf and the Strait of Hormuz, which are also the main areas of British shipping activity. During 1987, over 400 merchant ships were assisted in this way. No British merchant vessel has been attacked while in company with the patrol.

6. The discovery of mines in hitherto safe waters off the United Arab Emirates last year posed new dangers both to British merchant shipping and to the warships of the ARMILLA patrol. In consequence, it was decided to deploy four Hunt class mine countermeasures vessels (MCMVs) to the Gulf, together with their support vessels, in support of the patrol. In the first three months after their arrival in September, they located and destroyed ten mines,

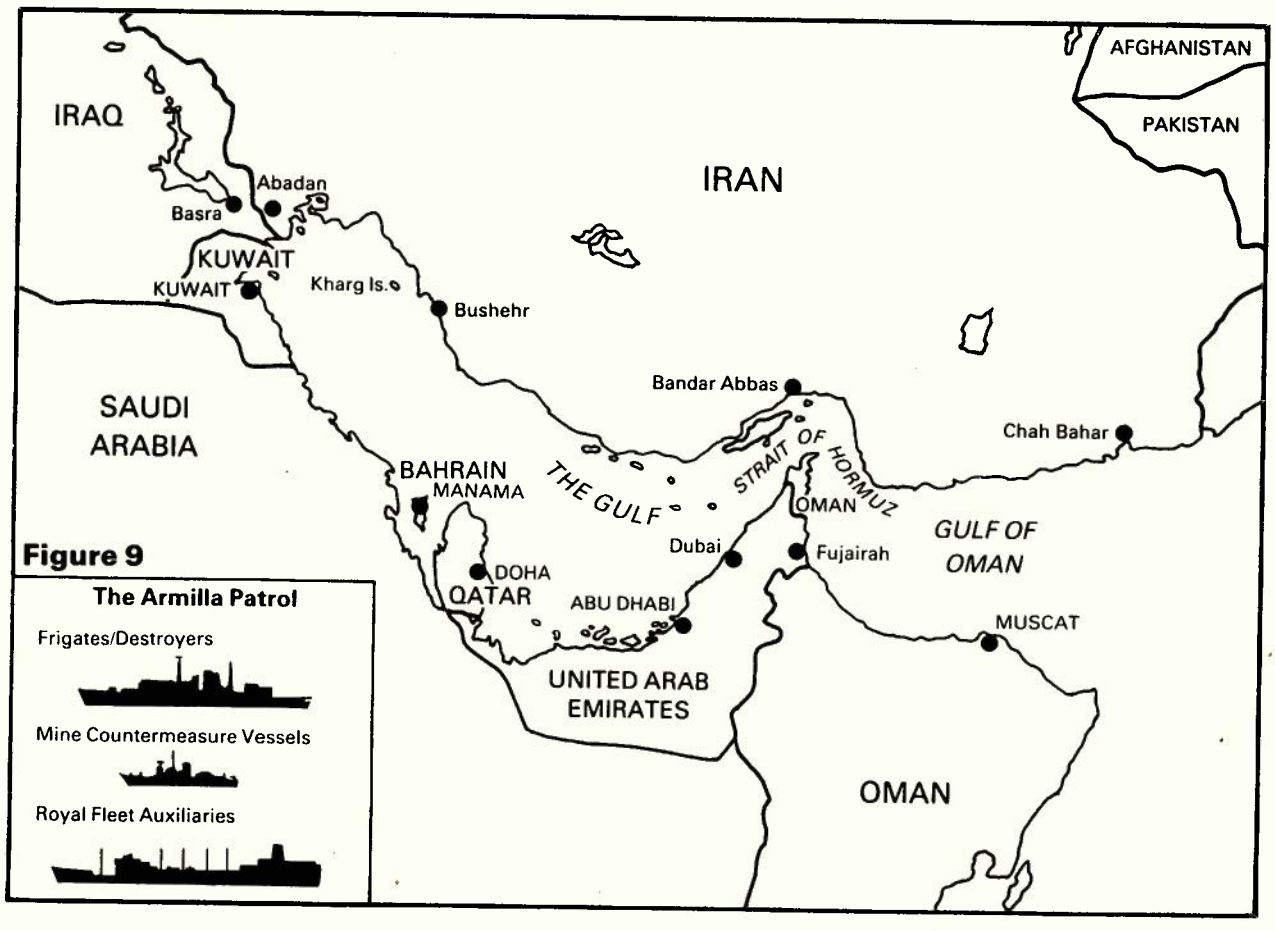


Figure 9

which would otherwise have posed a threat to shipping of all nationalities. In February 1988, it was decided in the light of the experience gained that the number of MCMVs in the Gulf could safely be reduced to three.

7. The Government welcomed last year's decisions by France to increase its naval presence in the area, and by Belgium, the Netherlands and Italy to send their own naval forces, including MCMVs. Luxembourg is contributing financially to the Belgian and Dutch mine-clearance force; and the Federal Republic is providing ships to substitute for those of other European nations that have had to be diverted from the Mediterranean.

8. While each nation retains control of its own ships, the Royal Navy maintains a regular exchange of information with all friendly navies operating in the region. We have agreed to provide logistic support, and in certain circumstances protection, to the Dutch and Belgian forces, which are acting jointly and with which we have developed a particularly close working relationship. The Royal Navy has worked alongside the Belgian and Dutch navies in a successful mine-clearance operation off Qatar, and with the French and Italian navies in equally successful operations off Fujairah.

9. This European effort, which has been welcomed by the United States, is partly the result of close and continuing consultations under the auspices of the WEU (see paragraph 114). Unanimous endorsement within this forum of the need for concerted action to help maintain freedom of navigation in the Gulf area has led to the most practical example yet of coordination by European navies outside the NATO area in peace-time.

Procurement

EQUIPPING THE ARMED FORCES

401. We plan to spend £8,241 million in 1988-89 on equipment for the armed forces. This represents 43% of the total defence budget, and £1,310 million more in real terms than was spent in 1978-79.

402. This substantial investment makes the Ministry of Defence the largest single customer for the products of British industry, which account directly for about 75% of the equipment budget; another 15% benefits British industry through its participation in collaborative projects and the remaining 10% is spent abroad. Defence procurement supports some 350,000 jobs in the United Kingdom, either directly or indirectly, and thus plays an important role in economic and industrial activity.

403. Equipment expenditure, while well above the 1978-79 level in real terms, has fallen somewhat from its recent peak. This underlines still further the need to get the best value from the resources available. The strategy we have adopted to this end is described on page 44. It has two main components: a more commercial approach to procurement, including improved internal procedures and greater flexibility allowed to industry; and collaboration with allies.

The Commercial Approach

404. Competition is an essential element in this more commercial approach. The proportion by value of contracts let on a competitive basis in 1986-87 was 53%, reflecting a sustained improvement on the 38% of contracts let in this way in 1983-84. The slight reduction since 1985-86 was caused by the incidence of major projects for which no competition at the prime-contractor level was possible, for example the first Trident submarine. But the total value of work placed competitively, at £3,578 million, was the highest ever; and there was also substantial competition for sub-contracts. Equally significantly, the value of contracts let on the basis of cost plus a percentage profit fell from 9% in 1985-86 to 7% in 1986-87; and each such contract is now subject to a cost ceiling.

405. This approach is continuing to reduce costs and encourage innovation. For example, during the last year:

- In the procurement of **sea systems,** batch ordering and competition have together driven down costs. Last July an order was placed, after competition, for four single-role minehunters at some 10% below the expected cost. Competition, together with the exploitation of modern cost-effective technology, has enabled us to achieve considerable savings in sonars: Sonar 2074, in particular, is being procured at about one-third the cost of the equipment it is replacing. A similar approach combined with economies of scale has led to savings of some 40% on the through-life costs of the communications system for the Type 23 frigate; and competition saved 30% in the cost of ships' compass transmitting equipment compared with the best previously quoted price.

- In the **land systems** area, we have achieved savings of 40% in the unit production cost of the second batch of the S10 respirator. Competition for the latest order for tank thermal-imaging systems produced 20% savings against previous budgetary estimates. And the contract for an air defence simulator showed savings of 40% against other tendered prices.

- In the **air systems** area, a recent competition for Harrier GR5 airframe fatigue testing resulted in a saving of nearly 70% on the earlier budgetary estimate. In a competition for the supply of the Tucano trainer aircraft simulator, the winning tender was more than 40% lower than originally estimated. Another competition, for a Magnetic Anomaly Detection System, showed a saving of 65% on the estimated price. And the winning bid in the recent competition for the supply of the UK Air Command, Control and Information System was about 40% less than the original estimated cost.

These 11 examples alone have brought savings totalling £105 million.

406. The success of this policy has been underpinned by encouraging the widest possible range of companies to compete for our business. This is reflected in a 30% increase in the number of companies seeking registration as defence contractors; and more companies are winning contracts. We have achieved this by working for a wider understanding both of the opportunities available for defence business and of how we conduct it:

- Last year's Statement reported the launch of our **Small Firms Initiative** to introduce ourselves to more companies in this sector of British industry. The response to the creation of the Small Firms Advice Division in the Ministry of Defence has been encouraging. In the first year of the initiative more than 1,300 companies have sought advice, and demand shows no sign of diminishing. The division has held 26 seminars around the country to explain our procurement policies and, in particular, how small firms can break into the

defence market. Over 1,100 companies have attended these seminars, and more are planned. The division has also attended 22 'Meet the Buyer' and other trade exhibitions, where it was approached by over 1,600 companies.

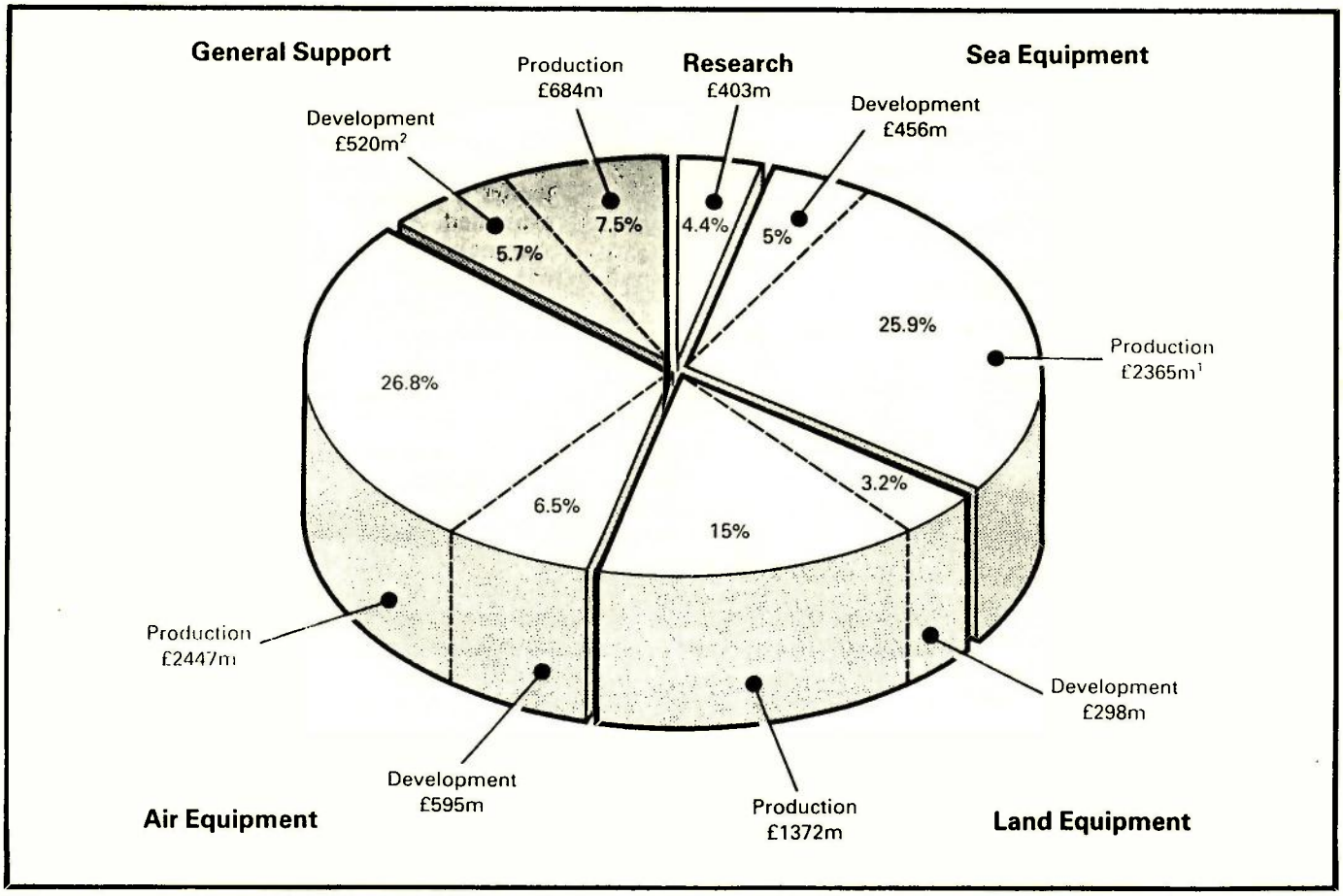
— The *MOD Contracts Bulletin*, launched in September 1986 to announce opportunities to compete at both prime- and sub-contract levels, has been expanded to include details of contracts awarded, offset opportunities for British companies and, occasionally, the requirements of US forces based in the United Kingdom. This is in addition to the advertisement of contracts and tenders valued at £0.5 million or above and opportunities for British companies in the US SDI programme (see paragraph 424). Industry has welcomed the bulletin, and we hope to extend and improve it further in the future.

— A further edition of the booklet *Selling to the MOD* is planned for this year. We have also published a booklet, widely distributed in the defence industry and in the City, outlining the **organisation and aims of the Procurement Executive** (PE).

A list of UK-based contractors paid £5 million or more by the Ministry of Defence in 1986-87 is given in Volume 2, Table 2.10.

407. Last year we reported the PE's initiative to make greater use of information technology to help monitor and control programmes. Recent developments have been the procurement of management information systems for the Quality Assurance and Export Services staffs, and an integrated information system for the land systems area. As an interim measure, additional micro-computers have been introduced into the air systems area to assist in the management of finance, project reporting, contracts and project management. The use of information technology in the sea systems area is being steadily expanded and improved. The management information system for senior staff concerned with equipment procurement, TOPMAST, is now available to more staff; and its information base continues to be expanded to include information on major PE programmes.

Figure 10 The Main Divisions of the Procurement Programme 1988-89



Notes

[1] Including the cost of equipment for dockyard services.

[2] Including the cost of some HQ staff who are responsible for both research and development.

Chips with Everything

1. Just as the microchip has transformed the industrial economies of the globe and the daily lives of its inhabitants, so it is revolutionising warfare. On the battlefield of the future the microchip will be ubiquitous. It will be found in the guidance systems of missiles, torpedoes and the precision-guided munitions fired by artillery; in increasingly capable sensors — advanced radars, other electronic and optical devices, and complex sonars — that give commanders a developing picture of the battle; and in the high-speed secure command and control systems through which commanders communicate their orders. Thanks to the chip, tomorrow's weapons will be more accurately delivered and controlled and will hit their targets more often.

2. The other side of the coin is that each unit of equipment will be more complex; and the technical risk of developing new systems, and the danger of time and cost overruns, is greater. It is now our common experience that weapon systems with a high content of computing and software are typically the ones that present the greatest problems of that sort.

3. We must grasp the opportunities offered by these technologies, for the army, navy or air force that lacks modern weapons is half-way to defeat before it begins to fight. The answer must be to find a way of managing and controlling, and thus reducing, the risks involved.

4. A task group led by the Ministry's Chief Scientific Adviser has examined the common characteristics of software-intensive projects, including those that have failed or run into difficulty in the past. It has produced a code of practice for the guidance of all staffs responsible for the scrutiny, approval or management of such projects. This guidance, a summary version of which will be made available to industry, is now routinely applied to all software-intensive projects that come forward for approval, and is already proving its value. It consists essentially of a series of questions covering the following ground:

- How dependent is the project on software?
- Are the characteristics of the system properly defined and understood?
- Is the nature and the size of the software development task fully recognised?
- Is a proper management structure in place, with the necessary qualified and trained staff?
- Has a comprehensive and realistic implementation plan been worked out and agreed between the contractor and the Ministry?
- Do the software tools and methods that the contractor proposes to use accord with the best practice?

5. There is nothing new about any of these questions. By codifying them in this way, however, we aim to provide, at the outset, the best possible basis for judging whether a software-intensive project is soundly conceived and likely to be capably executed. We are thus building on past experience to ensure that in future each such project will only go ahead when it is established on sound management and technical principles.

Equipment Collaboration

408. We have pressed on with our efforts to achieve value for money through wider and more effective collaboration in equipment procurement. Within the Alliance the main multilateral fora for this activity are the Independent European Programme Group (IEPG), which is responsible for developing cooperation within Europe, and the Conference of National Armaments Directors (CNAD), which promotes the same aim Alliance-wide. The activities of the two are complementary rather than competitive. It is the role of the IEPG to help achieve a more effective European contribution to the Alliance (see paragraph 113) by eliminating wasteful duplication of effort.

409. Last year we reported the steps being taken by the IEPG to make **European defence industry** more competitive. IEPG Ministers have welcomed the report of the independent study team, which recommended that this aim could best be achieved by opening up Europe's internal armaments market to a much greater degree. They have commissioned an action plan for pursuing the report's proposals and will consider this at their next meeting.

410. Good progress continues to be made in other areas of the IEPG's activities. In the last year, a further two **European staff targets** have been agreed, bringing the total in the past three and a half years to 15; the United Kingdom subscribes to nine of these. Vitally important though harmonised operational requirements and timescales clearly are, the acid test for European collaboration will be the initiation and follow-through of actual programmes based on these agreed staff targets. A useful, if modest, start has been made with the decision to launch a one-year study of the next generation medium-range surface-to-air missile.

411. The need for **collaborative research** in Europe was a key feature of the revitalisation of the IEPG in 1984, and it has been underlined at successive Ministerial meetings. Encouraging progress is being made: 20 cooperative technology programmes are now under way and, of these, the United Kingdom is participating in 17. The IEPG recognises that joint European research has to be more systematic, and considerable efforts are being made to that end, focusing initially on the application of advanced materials and computing.

412. In December 1987, NATO Ministers agreed in principle to create a **Conventional Armaments Planning System** (CAPS). It is intended that the CAPS should encourage cooperation among member countries by providing the armaments community with a framework within which to analyse national long-term armaments goals and to review how far national plans will meet Alliance needs. Detailed procedures for a two-year trial of the CAPS are now being drawn up by CNAD.

413. CNAD also continues to be the focus for collaboration in response to the **Nunn Amendment**, which has set aside funds from the US defence budget for collaborative research and development. In the last year the United Kingdom has signed four further Memoranda of Understanding (MOU) for such projects, including one for the development of the Question and Answer component of the NATO Identification System.

414. Table 5 provides a list of collaborative equipment currently in service or projects at various stages of development or study. Production of Harrier GR5 is continuing, as are deliveries of the Tornado aircraft (see paragraphs 315-316). Flight testing for the development of the Anglo-Italian EH 101 helicopter has been under way for six months. Good progress has been made on the evaluation of the results of the project definition phase of the European Fighter Aircraft project and on the negotiation with industry of the contractual terms that would govern full development. We announced in January this year our decision to participate in the project definition phase of the NATO Frigate Replacement for the 1990s (NFR 90), subject to the realistic and proper alignment of timetables for the ship and weapon system programmes at an early stage. We are also taking part in two new studies to identify future naval anti-air warfare missile systems. And we are now proceeding to full development of the Third Generation Anti-Tank Guided Weapon (TRIGAT) with our French and Gerr partners.

Design mock-up of the European fighter aircraft

415. A new initiative was launched in 1987, when the first **Anglo-French Defence Equipment Conference** was held at Lancaster House; senior officials and industrialists met to exchange information on future requirements. The first conference focused on land systems. A similar event dealing with sea systems was held

The Trident Programme

1. It is now six years since the Government decided to replace the British Polaris force with another four-submarine force armed with the Trident II D-5 strategic weapon system, and the programme remains on course for entry into service in the mid-1990s. At average 1987-88 prices and at an exchange rate of $1.62 to the pound (the rate used, by convention, for this year's recosting of the defence programme), the cost of the programme is estimated at £9,043 million; this represents a fall in real terms of £1,038 million compared with the original 1982 estimate. The cost of those elements of the programme to be procured from the United States is currently estimated at some 36% of the total.

2. The construction of the first two submarines, HMS *Vanguard* and HMS *Victorious*, is going well; and they are due to begin trials in the early 1990s. When orders for the remaining two boats have been placed and the programme reaches its peak, in 1990, it will be providing some 27,000 jobs in this country.

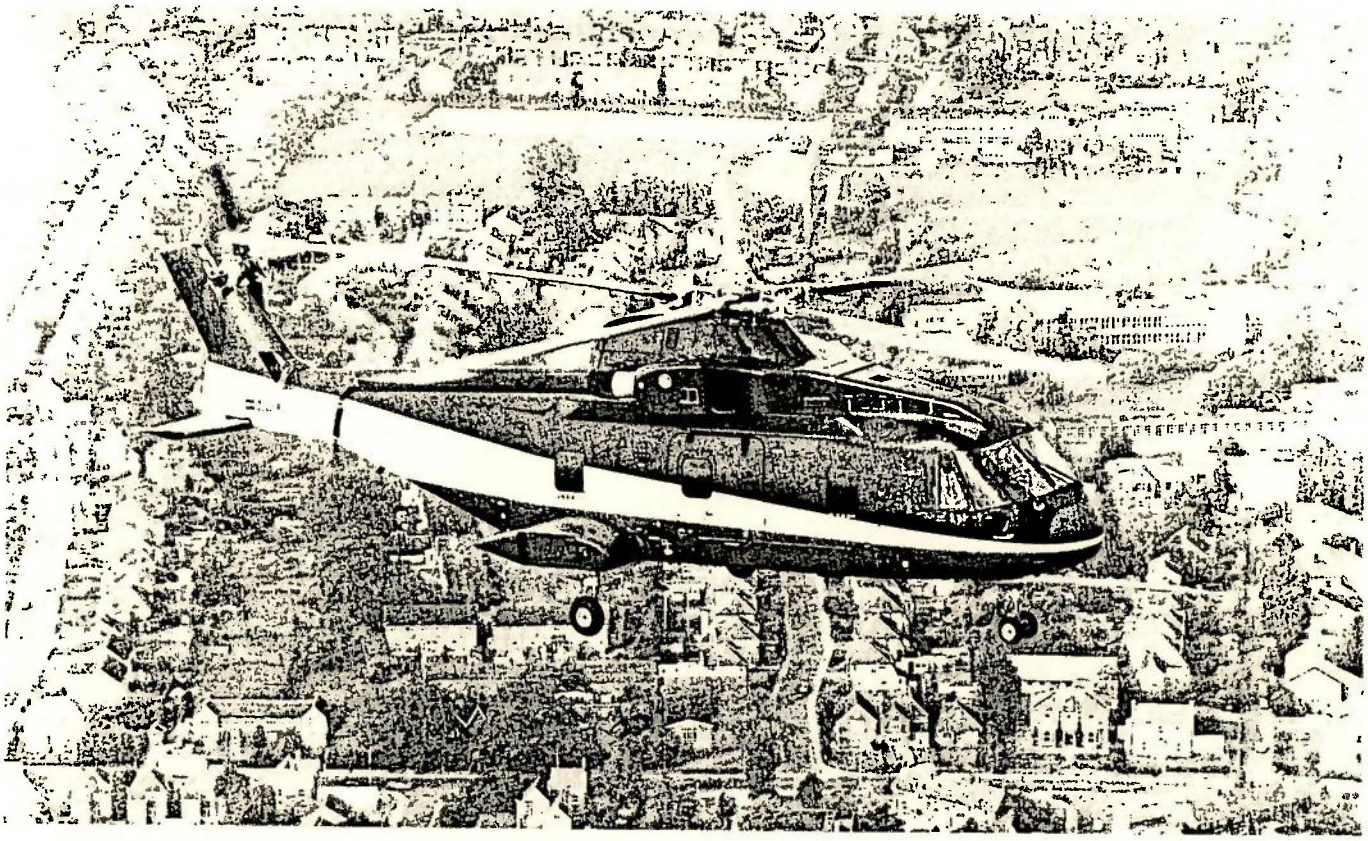
3. The development of the Trident D-5 missile in the United States is on schedule. The test flight programme has, to date, achieved a very high level of success; test firings from submarines are planned to begin in Spring 1989.

4. The construction programme at the Clyde Submarine Base in Scotland, where the Trident submarines will be based, is one of the largest in the United Kingdom. In the past year asbestos clearance from the Faslane site has been completed, as has a large programme of site preparation at the Royal Naval Armament Depot (RNAD), Coulport. Three new roads are now open, diverting construction traffic from local towns and villages. Contracts have been let for a ship-lift, to enable the submarines to be serviced out of the water, and for the construction of the explosives area and a generating station. Tenders have been invited for a floating jetty at the RNAD, and a start has been made on the refitting facility at Rosyth.

5. The latest estimate of the capital savings achieved by having Trident missiles serviced in the US facility at King's Bay, Georgia, rather than in the United Kingdom is some £770 million. In addition, this arrangement will save running costs throughout the life of the programme. Missiles (but not their British-manufactured warheads) will be sent to King's Bay after every seven or eight years of deployment, and replacements will be taken into service. These arrangements, reached in 1982, in no way affect the independence of our deterrent, which, with its British warheads and British-owned missiles, will remain at all times under the control of the British Government.

in March 1988, and one covering air systems is planned for later this year. French and British Defence Ministers endorsed this initiative when they met in December 1987. They also announced the establishment of a joint committee of officials to oversee arrangements to publicise contract opportunities in France and the United Kingdom in order to encourage purchases of each other's equipment.

— Three Queen's Awards for Technological Achievement have been shared with industry: the **Royal Signals and Radar Establishment** (RSRE) and the English Electric Valve Company won two, for improvements to thermal-imaging cameras and work on image intensifiers; and the **Royal Aircraft Establishment** (RAE) shared an award with GEC Avionics for work on night-vision technology for aircraft.



EH 101 on its maiden flight over Yeovil, October 1987

DEFENCE RESEARCH

416. A total of £403 million has been provided for defence research in the defence budget for 1988-89. This represents about 2% of the total budget and some 4% of planned expenditure on the procurement programme (see Figure 10).

417. Last year's Statement recorded the Government's concern to ensure that defence does not pre-empt an excessive share of the nation's technological resources. To that end we continue to pay very close attention to the real level of defence research and development (R&D) expenditure, the aim being to achieve a gradual reduction over the next decade. This will involve looking very carefully at what is available off the shelf and at the opportunities for international collaboration, before embarking on major new programmes. There will, however, be no abrupt change; the Ministry of Defence will continue to fund R&D in industry on a substantial scale.

418. The last year has seen further notable achievements by the defence research establishments:

— **RAE's** development, with Alcan International, of aluminium lithium alloys, which are both stiffer and lighter than other such alloys, is being successfully marketed, particularly in North America; and RAE's development, with Westland Helicopters, of advanced rotor systems is being exploited in the development of EH 101.

— The Viper high integrity microprocessor, based on **RSRE** research, was launched as the first such system to be made available commercially; it is ideally suited to applications where safety is critical, as in road and rail traffic control and avionics.

— The **Admiralty Research Establishment** has developed special equipment for the detection, avoidance and disposal of mines, for use by the Royal Navy's MCM squadron in the Gulf.

— Successful research at the **Royal Armament Research and Development Establishment** into low-cost techniques of chemical synthesis has shown

the potential for application of similiar techniques in the fertiliser and pharmaceutical industries.

— Research carried out at the **Chemical Defence Establishment** (CDE) into gas and aerosol detection has led to the development of technology for environmental control in hospital operating theatres; and CDE research into microbiological defence has led to a new design of hypodermic syringe, already being used in the civil sector, which reduces the risk of injury.

These five research establishments, and the Aeroplane and Armament Experimental Establishment at Boscombe Down, are being considered, as a group, for possible agency status under the Government's plans for improving management in the public sector (see paragraphs 510-511).

419. We remain committed to harnessing the capabilities of the defence research establishments for the benefit of the wider economy. Defence Technology Enterprises Ltd (DTE) is now well established in its role of encouraging private industry to exploit technology originating in our establishments. It has representatives at four of the larger research establishments, and has attracted over 260 companies as associate members. As a result of its work so far, DTE has arranged 32 licenses or signed options with companies to use Ministry of Defence technology. Substantial additional technology development at a cost of some £5 million has been undertaken by the companies concerned, which are expected to achieve sales worth £40 million over six years from the resulting products. Further licenses are under negotiation. A new development has been the launch, with the Department of Trade and Industry, of the Civil Industrial Access Scheme. This is designed to encourage civil industry to make greater use of the expertise that the defence research establishments can provide through collaborative work, the use of their facilities, and advice and consultancy.

Gruinard Island

1. 1987 saw the successful decontamination of Gruinard Island (off the north-west coast of Scotland), which had been infected with anthrax spores during the Second World War. After many years when it was thought that decontamination would not be possible, infected areas were treated with a solution of formaldehyde and sea water and sampled, using new techniques, to establish that the remedy had worked.

2. An independent advisory group, consisting of distinguished scientists from outside the Ministry, has monitored the planning and execution of the treatment and the analysis of the results. On its recommendation, as a demonstration of confidence, sheep were safely grazed on the island during the spring and summer of 1987. The group has now endorsed our conclusion that the island can be considered safe for disposal; and it will shortly be offered to its original owners, as provided for in the terms of the transfer to the then Ministry of Supply in 1947.

Table 5 Collaborative Projects Involving the United Kingdom

Project	Participating Countries [1]
In production or in service	
Naval Equipment:	
Sea Gnat Decoy System	DE/UK/US
Ikara Anti-Submarine Weapon	AUS/UK
Barra Sonobuoys	AUS/UK
Land Equipment:	
FH70 Howitzer	GE/IT/UK
M483A1 Artillery Shell	NL/UK/US
Scorpion Reconnaissance Vehicle	BE/UK
Multiple-Launch Rocket System Phase 1	FR/GE/IT/UK/US
Missiles:	
Martel Air-to-Surface	FR/UK
Sidewinder Air-to-Air	GE/IT/NO/UK/US
Milan Anti-Tank (including improvements)	FR/GE/UK
Air Systems:	
Jaguar	FR/UK
Lynx, Puma, Gazelle	FR/UK
Tornado	GE/IT/UK
Harrier AV8B/GR5	UK/US
Other Equipment:	
Midge Drone	CA/GE/UK
In development or earlier study phases	
Naval Equipment:	
NATO Frigate Replacement (NFR90) [2]	CA/FR/GE/IT/NL/SP/UK/US
Ships Low-Cost Inertial Navigation System	CA/NL/SP/UK
Advanced Sea Mine [2]	UK/US
Land Equipment:	
COBRA (Counter Battery Radar)	FR/GE/UK
Multiple-Launch Rocket System Phase III	FR/GE/UK/US
Missiles:	
Modular Stand-Off Weapons [2 3]	CA/FR/GE/IT/SP/UK/US
TRIGAT (Third Generation Anti-Tank Guided Weapon)	FR/GE/UK
Advanced Short-Range Air-to-Air Missile	GE/NO/UK
NATO Anti-Air Warfare System [2]	CA/GE/NL/SP/UK/US
Family of Anti-Air Missile Systems	FR/IT/SP/UK
Air Systems:	
Airborne Radar Demonstrator System [2]	FR/UK/US
European Fighter Aircraft	GE/IT/SP/UK
EH 101 Helicopter	IT/UK
A129 Light Attack Helicopter	IT/NL/SP/UK
RTM 322 Helicopter Engine	FR/UK
Other Equipment:	
NATO Identification System (NIS) Information Exchange [2]	BE/CA/DE/FR/GE/IT/SP/TU/UK/US
NIS,Question & Answer Component Development [2]	FR/GE/IT/UK/US
Ada Computer Language Project Support Environment [2]	CA/DE/FR/GE/IT/NL/NO/SP/UK/US
Multifunctional Information Distribution System [2]	CA/FR/GE/IT NO/SP/UK/US
Midge Post-Design Services	CA/GE/UK

Notes:
1 AUS=Australia; BE=Belgium; CA=Canada; DE=Denmark; FR=France; GE=Federal Republic of Germany; IT=Italy; NL=Netherlands; NO=Norway; SP=Spain; TU=Turkey; UK=United Kingdom; US=United States.
2 US share of these projects includes Nunn Amendment funding.
3 The Modular Stand-Off Weapons programme has now subsumed the work of the Long-Range Stand-Off Missile programme, listed in 1987.
4 Collaborative work on the Short-Range Anti-Radiation Missile, which was listed last year, has been discontinued.

DEFENCE EXPORTS

420. 1987 did not produce exports of defence equipment on the scale of the previous year, when the first contracts for the sale of Tornado aircraft and other equipment to Saudi Arabia — our largest ever defence order — were signed. But the general upward trend of our sales over recent years has continued, and contracts signed in 1987 are expected to reach £3,500 million.

421. Our defence trade with the United States has continued to grow, covering a wide range of British products for US forces; and last year we became the United States' leading defence trading partner. Other major successes in 1987 included sales of an Army communications system to Australia, and of Hawk aircraft to the Swiss Air Force.

422. The Defence Export Services Organisation (DESO) continues to work closely with British defence manufacturers, large and small alike, to help win orders in an extremely competitive world market. Industrial and financial symposia were arranged in 1987 to help companies formulate effective export marketing strategies. Among the promotional activities mounted during the year, the Royal Navy Equipment Exhibition at Portsmouth included representation from more than 300 British companies and attracted visitors from 76 overseas countries. The biennial British Army Equipment Exhibition will be held in 1988. These exhibitions, arranged by the DESO, are proving increasingly successful as shop windows for British manufacturers.

423. Strict controls on defence exports are essential to prevent weapons and other sensitive items falling into the wrong hands. These controls, involving several Government departments, must be applied effectively, but also with sensitivity so as not to impede unnecessarily the flow of legitimate defence business. The DESO plays an important part in exercising these controls and in advising industry on their effect.

BRITISH PARTICIPATION IN THE SDI RESEARCH PROGRAMME

424. The SDI Participation Office (SDIPO) in the Ministry of Defence has continued to promote British participation in this US programme under the terms of the US/UK MOU signed in December 1985. The service provided to help British companies and research institutions to secure SDI contracts remains the major activity of the Office, which was reinforced in 1987 by the appointment of two further specialists, one based in Washington, the other in Los Angeles. The SDI supplement to the *MOD Contracts Bulletin* (see paragraph 406) has been well received. The comprehensive exchange of technical information between the US and British Governments, also coordinated by the SDIPO, is developing satisfactorily.

425. By February 1988, some 65 US-funded SDI contracts and sub-contracts had been placed in the United Kingdom to a value of $60 million. This total includes the first substantial sub-contract secured by British industry: by Ferranti Computer Systems Ltd, working for the Martin Marietta Aerospace Corporation on the US National Test Bed for the SDI. It also includes encouraging successes for British higher academic research bodies: 17 such institutions have received contracts worth $10 million. This work has been gained in a climate of competition for SDI research work that has turned out to be, if anything, more severe than predicted in last year's Statement.

426. The degree of interest shown by British industry in presenting proposals to the United States continues to grow. These proposals have been innovative and of high technical quality, but they need to be targeted with increasing precision as pressures on the SDI budget grow and as competition intensifies. The SDIPO will continue to contribute its best efforts to achieving this.

Procurement: Keeping Up with the Times

1. The increasing sophistication of the threat faced by our armed forces, and the consequent growth in the real cost of equipment to meet it, have caused the Ministry of Defence to change the emphasis of its approach to procurement in recent years. We have adopted a more commercial attitude, exploiting the best practices to obtain long-term value for money. And we have been working more closely with our allies to secure greater output from our collective investment in defence procurement. Our fundamental aim remains unchanged: to buy for the armed forces the equipment they need to the required quality, at the right time and at the keenest price. Good management by the Procurement Executive (PE) contributes significantly to the ability of the British armed forces to meet our defence commitments. It also contributes to the Government's broader policy for improving the working of the economy by making markets operate more effectively.

2. Competition is a vital part of this strategy. As well as requiring companies to quote keen prices, it stimulates innovative thinking and efficient use of industrial resources. To make the defence market operate in a competitive way, we must have the right procedures and the right staff.

The Right Procedures

3. We used to define equipment down to a very detailed level and ask industry to develop and produce it. Today, however, industry makes a far greater contribution to deciding how the Services' requirements can best be met. Whenever possible, we express a requirement in terms of specified criteria, such as performance and reliability, and leave it to the contractor to decide how to meet them. This can lead, at one extreme, to an entirely new design or, at the other, to an off-the-shelf purchase.

4. We place responsibility and risk with the contractor, providing him with the incentive to deliver equipment at the agreed time and at the agreed price. Where appropriate, we place package contracts for both development and production, giving a potential contractor considerable freedom to decide how much development work will enable him to make us the most attractive offer.

5. Competition is sought wherever reasonable and practicable. Where it is not, we aim to give contractors the greatest possible incentive to perform the work efficiently. This means, for example, that we have moved away from contracts in which we pay the costs incurred plus a percentage fee for profit. We also encourage as much competition as possible among sub-contractors; on all contracts over £1 million in value, whether or not they have been let competitively, we review with the prime contractor his plans for competition in the award of sub-contracts.

6. We have, in addition, revised our approach to interim payments in new contracts; we now relate such payments to actual progress being achieved. In 1986 we secured Treasury agreement to increase the amount of underspent procurement expenditure that can be carried forward at the end of the financial year. In addition to the existing 5% of the provision for capital expenditure, we now have up to an additional £400 million for a period of three years. This greater flexibility means that we can maintain the financial incentive for contractors to perform efficiently, rather than working within a rigid annual cash limit, which in the past led to the Ministry making payments simply to reflect the passage of time rather than a contractor's performance.

7. By promoting efficiency, these policies in turn help companies to be competitive in their exports. And we therefore take great care over the export potential of equipment when we draw up staff targets and staff requirements.

8. The PE is also seeking to spread defence work more widely within industry. We already have about 9,000 companies registered with us, and the newly established Small Firms Advice Division helps small companies bid for defence work. Industry responds better when it understands our approach and has the fullest information possible about our requirements. Therefore:

- We have published a code of practice on competition in the award of sub-contracts, and guidelines on competitive tendering procedures and on financing terms for defence contracts. These have all been prepared in consultation with industry.
- We announce details of potential orders worth over £0.5 million in the fortnightly *MOD Contracts Bulletin,* so that companies can compete for business at both prime- and sub-contract level. We also use the bulletin to help identify potential new bidders for major programmes and to encourage suppliers to tender for work in fields new to them.
- We arrange regular conferences to review with industry the future requirements of the armed forces.

- We brief unsuccessful bidders so that they know why they were not awarded contracts.

- The Defence Export Services Organisation advises companies on how to exploit the export potential of defence equipment.

The Right Staff

9. Competition makes demands on the PE's staff as well as on companies. Staff need to have as commercial an attitude as possible in their dealings with industry, while maintaining, as public servants, standards of even-handedness that cannot be measured in financial terms. We have adopted a systematic approach to career management and training to ensure that project staff receive, through a system of linked postings and training, the experience and knowledge they need in appropriate disciplines. We are continuing the policy of exchanging personnel between the PE and industry and commerce; there are now over 200 such interchanges a year, more than double the number two years ago.

10. Engineers play a vital role in the procurement process. The Defence Engineering Service, bringing together all the civilian engineering specialists in the Ministry of Defence, was successfully launched last year (see paragraph 520), enabling us to make the best use of these skilled specialists and improve their status.

11. Project managers are now clearly identified as in charge of, and responsible for, all aspects of a project's progress. They lead an integrated multi-disciplinary team, including finance and contracts staff. We are currently studying how best to enable the Defence Quality Assurance organisation to devote more attention to product specification, while retaining its responsibility for assessing and checking the quality management systems used by contractors.

12. The PE Management Board now operates on the model of a commercial board of directors, under the chairmanship of the Chief of Defence Procurement. Each of the three Systems Controllers (sea, land and air) provides a monthly report on the technical and financial progress of his projects, giving the earliest possible warning of difficulties.

The International Dimension

13. We cannot afford to develop all our defence equipment in this country. The argument for collaboration with our allies is straightforward: better value for money can be achieved by sharing development costs, increasing production runs and pooling resources for logistic support. No less important are the benefits to be gained from access to the best ideas from the best companies in partner countries. From an Alliance-wide point of view, we do not secure the best value from the resources we put into our collective defence (nor do we achieve full operational efficiency) if the development and production of similar equipment are wastefully duplicated by separate programmes in separate countries.

14. The traditional approach to collaboration, illustrated by the projects listed in Table 5, has been the development and production of equipment by groups of countries, or licensed production in one country of equipment designed in another. Last year's Statement recorded our commitment to develop and produce most significant new equipments in collaboration with allies unless there are pressing reasons not to do so — and provided we get value for money. The last qualification is important because collaboration is not an end in itself. There is growing acceptance of the need to maximise the benefits of international projects by adopting arrangements to promote efficiency. Other European nations, for example, increasingly recognise the advantages of competitive procurement, and this is becoming a more common feature of collaborative projects.

15. But we want to encourage different types of cooperation as well, since there will be occasions when the traditional approach is not the most efficient. In the case of the less costly projects, for example, it may make more sense for countries to agree to buy from one another equipment that each has developed on its own. This can lead to many of the benefits of collaborative development, with the added advantage of simplicity. Such an approach — known as reciprocal purchase — offers the prospect of introducing off-the-shelf equipment into service, thus eliminating or reducing duplication of research and development, as well as creating economies in production through longer production runs. Similar benefits can be obtained by off-the-shelf purchases from abroad with offset arrangements.

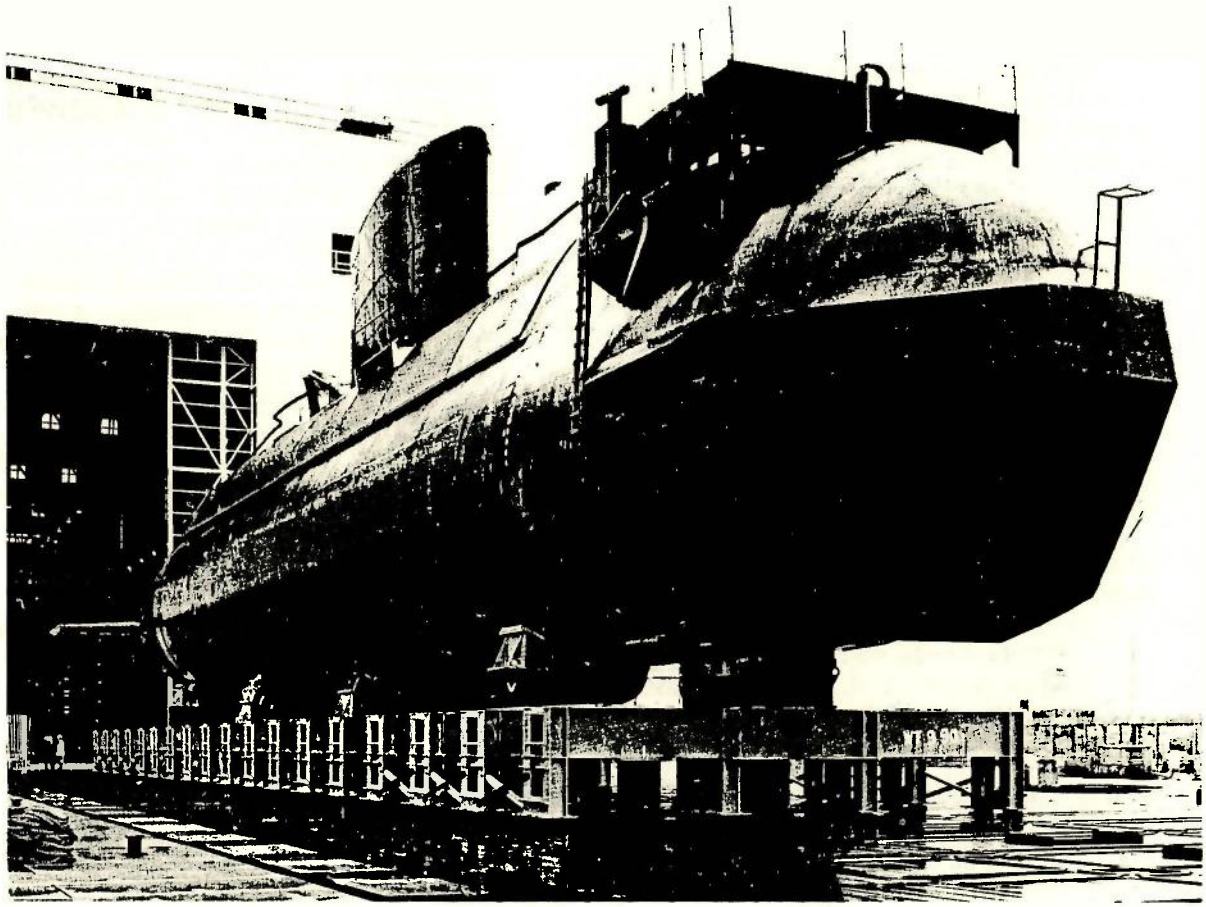
The Benefits

16. We can already see the benefits of adopting this commercial approach to procurement. The examples given in paragraph 405 of recent successes in driving down costs produced savings of £105 million in the last year. And significant savings have been

achieved in previous years, for example £20 million saved on the first batch of Upholder class submarines; £100 million on the first order of the Warrior infantry combat vehicle; and £60 million on the RAF's basic trainer. In addition, international cooperation is enabling us to share the cost of developing expensive new equipment with our allies. The result is that our armed forces benefit by receiving more equipment for the same expenditure. And British companies, as they become more competitive and have better products to sell, are exporting more than ever; our defence exports tripled in real terms between 1979 and 1986.

17. The task is now to build on the successes already achieved and to reinforce the changes in practices and attitudes that have been described in this essay. We must keep up with the times if we are to continue to provide the British armed forces with the equipment they need within the resources available to us.

HMS *Upholder*, Type 2400 submarine, being prepared for launch



Money and Management

THE DEFENCE BUDGET

501. The defence budget for 1988-89 is £19,215 million — £433 million more than the original Supply Estimates provision for 1987-88 and £235 million more than the provision planned for 1988-89 in the 1987 Public Expenditure White Paper. The planned provision for 1989-90, at £19,950 million, is also above that shown in the 1987 White Paper, by £480 million. Provision for 1990-91 has been set at £20,560 million.

502. A breakdown of the defence budget by main areas of expenditure is shown in Figure 11. Figure 12 analyses defence expenditure by major programmes, while Figure 13 illustrates the cost of our main commitments. Figure 14 shows that, in absolute terms, as a percentage of gross domestic product, and ***per capita,*** the British defence budget continues to be among the highest in NATO.

503. Last year's Statement said that in real terms the defence budget was expected broadly to level out in 1989-90. New plans reflected in the 1988 Public Expenditure White Paper mean that, on current inflation forecasts, the defence budget will now benefit from a broadly level provision between 1988-89 and the end of the present public expenditure planning period in 1990-91. Past Statements have warned that the ending of the commitment to maintain real growth inevitably means that difficult choices have to be made between priorities in our forward plans; but we shall maintain our main defence roles. The extra resources now available provide greater room for manoeuvre at the margins of the programme, but will not avoid the need for some difficult decisions, of the kind we face every year in the course of our usual planning cycle. This makes it all the more important to pursue efficiency and value for money to the greatest possible extent. Recent progress in this area is described in the following paragraphs and in Chapter 4.

Value for Money

504. The Ministry of Defence has made a major contribution to the Government's plans to reduce the size of the Civil Service. Since 1979, UK-based civilian staff numbers have decreased by over 100,000, or 41%, to 145,000, lower than planned. Over 65% of these savings have come from our programme of efficiency measures, rationalisation of tasks and contracting out; the remainder have resulted from the privatisation of the Royal Ordnance Factories and the introduction of commercial management into the Royal Dockyards. The search for further economies will continue.

505. Economies are also being made in Service manpower, particular effort being directed towards achieving savings in support areas:

- Since 1981, the proportion of Royal Navy personnel serving on the front line or immediately in its support has increased to 70%, and the Service's uniformed strength has been reduced by over 8,000. Less manpower-intensive ships are also being introduced into the Fleet; for example, on current plans the crew of a Type 23 will be two-thirds of that needed in a Type 22.

- The Army's Lean Look programme is progressing well; this aims to save about 4,000 uniformed support posts by 1990, and about half of these had been achieved by April 1988. The programme will enable us to improve our front-line capability, including, for example, the reroling and deployment to BAOR of an additional armoured regiment and the new Starstreak air defence regiment, without any increase in total manpower.

- The RAF, too, continues to search for ways to carry out its task more efficiently; economies achieved by contracting out and transferring Service posts to civilians have yielded savings of some 1,700 uniformed posts in the support area since 1984, and there are plans to save as many again over the next few years.

506. Increasing the role of the private sector in defence support tasks has the additional advantage of introducing the benefits to be derived from competition in the commercial market. For example, 90% of ship refitting is now undertaken commercially, including more than 20% in the open market; about one-third of the Army's third-line equipment repair work in the United Kingdom is undertaken by commercial contractors; and about half of all aircraft and engine repair and overhaul for the RAF is carried out in industry.

Financial Management

507. Improving the way in which Whitehall departments manage their resources remains an important aim of the Government. The Financial Management Initiative (set out in Cmnd 9058 of 1983) aims to achieve this by stressing the need for departments to set clear objectives, to define precisely where responsibility lies for meeting these objectives and to monitor whether they are being achieved.

Investment In Conventional Defence

1. Between 1979-80 and 1985-86 provision for defence grew steadily as a result of the Government's increasing expenditure in response to the NATO target of 3% a year real growth. This allowed a wide range of improvements to be made in the capabilities of our armed forces. In cash terms, about 95% of the increase was devoted to our conventional forces — some £16,000 million more than if expenditure had continued at 1978-79 rates — and this included substantial and continuing investment in equipment.

2. The product of this investment is illustrated in the following table, which sets out major new equipment ordered since 1979. The table also shows how much of this equipment has yet to be brought into service, illustrating that the benefits of this investment have yet to to be felt in full.

Table 6

Royal Navy [1]	Numbers ordered	Numbers Brought Into Service	Balance
Submarines			
2 Trident	2	—	2
5 Nuclear-Powered Fleet	5	2	3
4 Type 2400 Diesel-Electric Patrol	4	—	4
Frigates			
8 Type 22	8	4	4
4 Type 23	4	—	4
MCMVs			
8 Hunt Class	8	7	1
12 River Class	12	12	—
5 Sandown Class	5	—	5
Patrol Craft			
3 Falkland Island Patrol Vessels [2]	3	3	—
2 Offshore Patrol Vessels	2	2	—
5 Hong Kong Patrol Craft	5	5	—
Auxiliaries			
1 Seabed Operations Vessel	1	1	—
2 Auxiliary Oiler Replenishment Vessels	2	—	2
1 Aviation Training Ship [2]	1	1	—
1 Coastal Survey Vessel	1	1	—
1 Landing Ship Logistic	1	1	—
Naval Aircraft			
23 Sea Harrier FRS1	23	20	3
13 Sea King Mk 5	13	13	—
4 Sea King Mk 6	4	—	4
8 Sea King AEW [3]	8	8	—
24 Sea King Mk 4	24	21	3
10 Lynx Mk 2/3	10	10	—

Army	Numbers ordered	Numbers Brought Into Service	Balance
Tanks			
7 Challenger Regiments	7	5	2
Full Operational Stocks of 120mm Ammunition [4]	Complete	Initial	—
Night Observation and Gunnery Sights [4]	Initial Batch		Final Batches
Armoured Personnel Carriers			
13 Warrior Battalions	13	1	12
10 Saxon Battalions	10	8	2
Logistic Vehicles			
1,045 14 Tonne Load Carriers	1,045	130	915
3,006 8 Tonne Load Carriers	3,006	2,547	459
343 6x6 Recovery Vehicles	343	207	136
Helicopters			
25 Lynx (Armed with TOW)	25	25	—
Further Improved TOW for Lynx Anti-Tank Squadrons	—	—	All
Field Artillery			
3 MLRS Regiments	3	—	3
1 Bates System	1	—	1
Air Defence Batteries			
3 Rapier Field Standard B2	3	—	3
4 Tracked Rapier	4	2	2
2 Rapier 2000(FSC)	2	—	2
18 Javelin Launcher [5]	18	12	6
3 Starstreak High Velocity Missile (HVM)	3	—	3
Air Defence Alerting Device To Equip Javelin/HVM	—	—	All
Infantry Weapons			
332,000 SA80 Small Arms System	332,000	48,000	284,000
2,700 51mm Mortar	(see [6])	(see [6])	(see [6])
Full Operational Stocks of Law 80 [4]	Initial Batch		Balance
Other Equipment			
1 Wavell ADP System	1	1	—
1 Ptarmigan Digital Communications System	Phases 1 & 2		Phase 3
3 Troops Phoenix RPV	3	—	3
Full Operational Stocks of Full-Width Attack Mine Fuze [4]	Initial Stocks		Balance
Challenger ARRV	—		Initial Deployment
Full Operational Stocks of General Service Respirator [4]	Initial Stocks		Balance
1 Electronic Warfare System	—		1

RAF [1]	Numbers ordered	Numbers Brought Into Service	Balance
Strike Attack			
82 Tornado GR1	82	55	27
Offensive support			
96 Harrier GR5 [7]	2		
Air Defence			
162 Tornado ADV	162	85	77
15 Phantom F4J	15	15	—
7 Boeing E-3	7	—	7
Transport/Tankers [8]			
9 Tristar	9	3	6
8 Chinook Helicopters	8	8	—
Basic Trainer			
130 Tucano	130	—	130

Notes

1 Platforms only: although accepted into service, completion of trials may still be awaited.
2 Purchase and conversion of second-hand ships.
3 Conversions of existing aircraft.
4 Numbers not given for security reasons.
5 Includes Territorial Army.
6 Equipment currently undergoing modification to achieve improved build standard.
7 Includes 2 prototypes and aircraft number ZD 325, lost on 22 October 1987. Deliveries have been temporarily suspended pending the implementation of the accident enquiry recommendations.
8 Excludes 9 VC10 tankers, shown in previous Statements, which were ordered before May 1979.

508. The Ministry of Defence is playing a full part in this initiative. Recent Statements have described the development and introduction of such new management systems as Executive Responsibility Budgets (ERBs), which enable management to relate all the costs attributable to a particular activity to the results produced by it; and Staff Responsibility Budgets (SRBs), which allow managers flexibility in the allocation of manpower. In 1987-88 the ERB arrangements were extended to further units in the support field. And higher-level ERBs were introduced in a number of management areas: naval supply, aircraft engineering and marine services, Army supply and training, RAF repair and supply, and Service hospitals in the United Kingdom. The ERB system currently covers cash expenditure amounting to some £5,000 million a year. For the future, there are firm plans for the introduction of more ERBs at both unit and senior management levels.

509. Work is continuing on the development of the new management strategy foreshadowed in last year's Statement. The aim is to secure better value from the Department's running costs (ie all expenditure other than major capital expenditure) by more closely aligning responsibility for both financial and line management. The emphasis is on centralised resource allocation, greater managerial freedom within the approved budgets and accountability to higher management. The new strategy has two main elements:

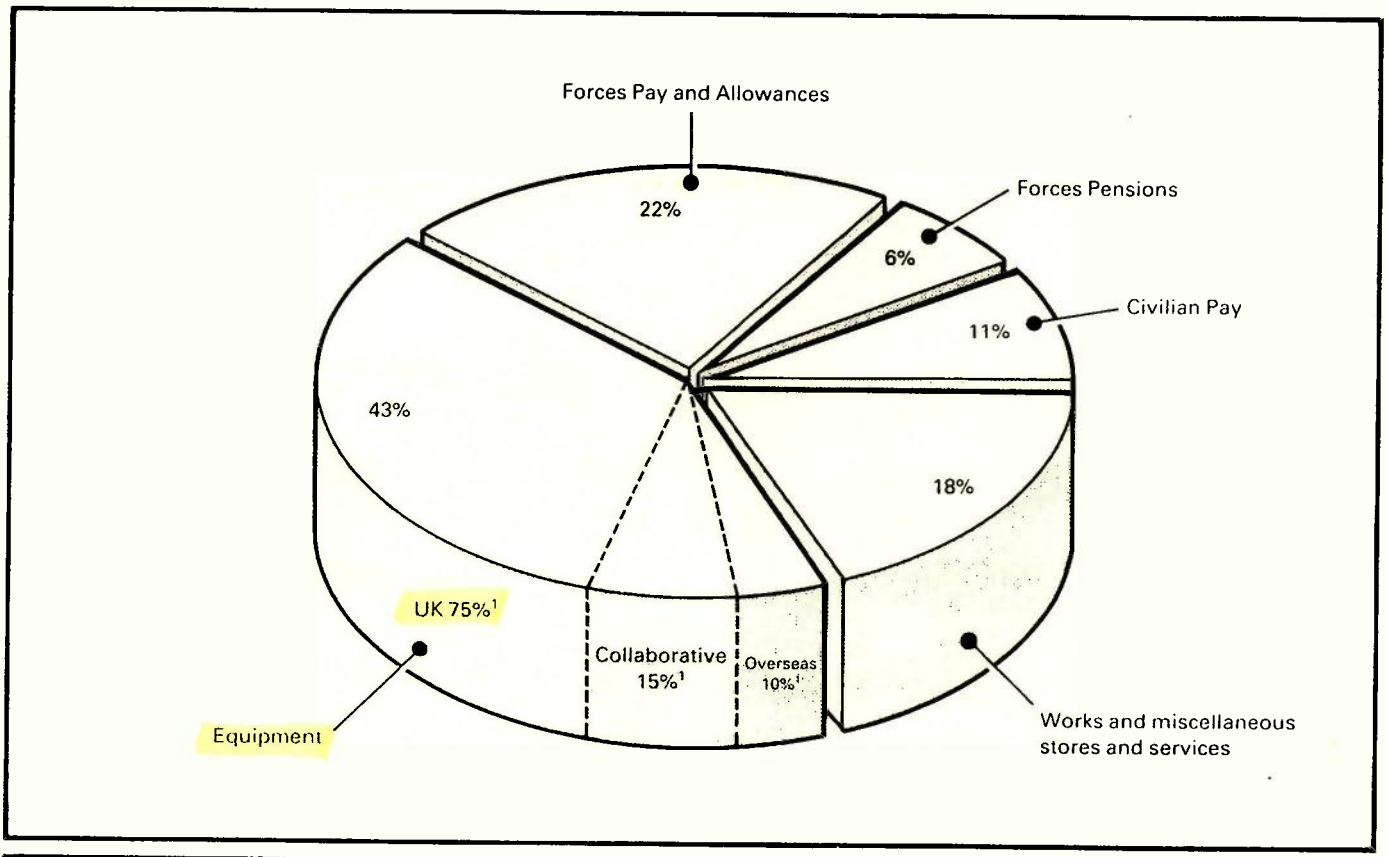
— A more comprehensive budgetary regime, which will not only subsume existing ERBs and SRBs but also include all the Department's running costs, in both the operational and support areas.

— A management information system (TOPMIS), which will replace MINIS and will serve the needs of the Financial Planning and Management Group (in its role as the Ministry's Top Management Group), the Service Executive Committees and the Procurement Executive Management Board, providing them with a vehicle for setting objectives and targets and undertaking an annual review of performance.

'The Next Steps'

510. In February 1988, the Government announced its response to the recommendations in Sir Robin Ibbs' report on ***Improving Management in Government — The Next Steps***. This accepted the report's recommendation that, to the greatest possible extent, the executive functions of government should be delegated to agencies each headed by a chief executive working within a policy and resources framework set by the responsible Minister. The Ministry of Defence is considering two candidates for possible agency status: the group of six non-nuclear research establishments (see paragraph 418) and the Meteorological Office (see paragraphs 530-532). The

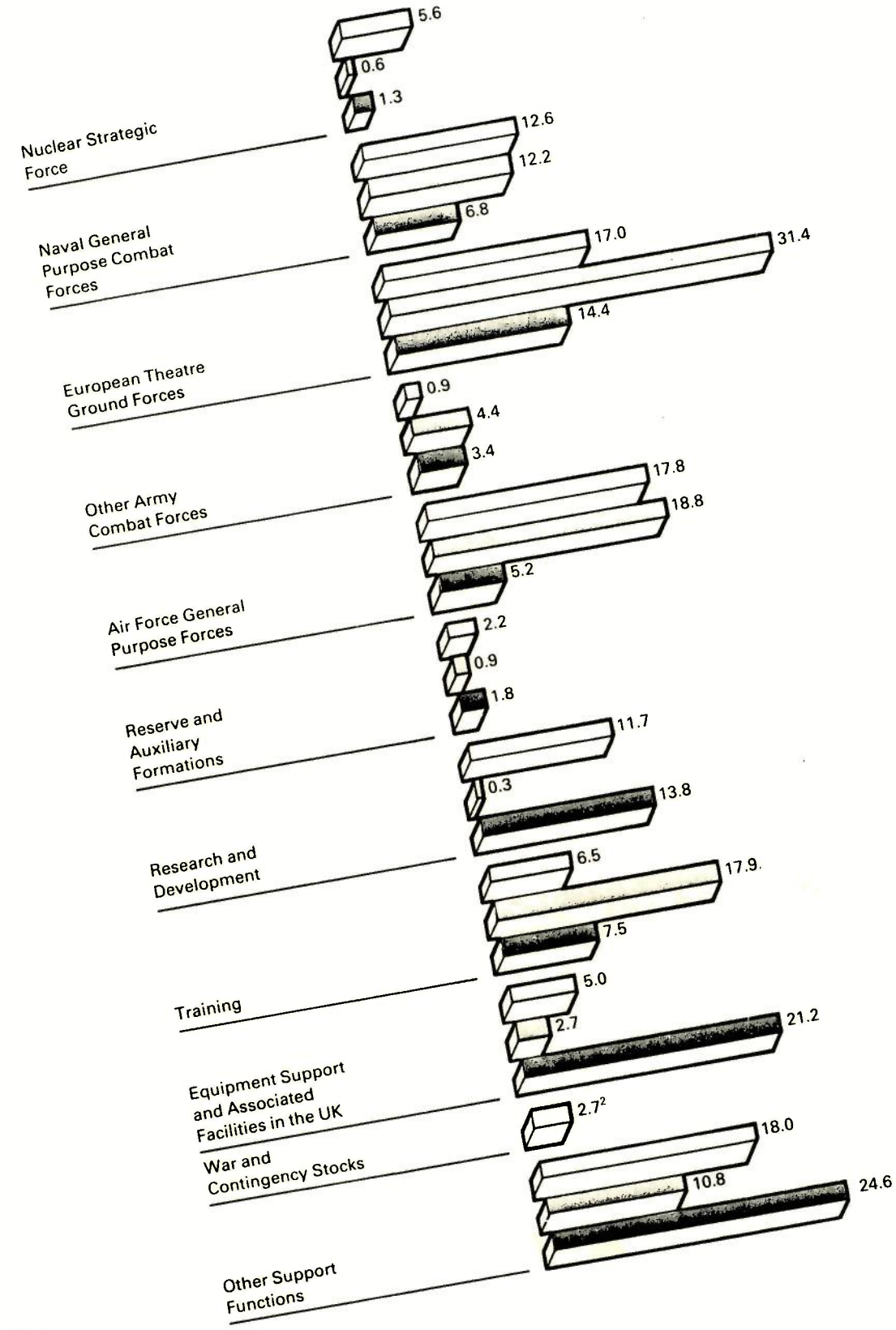
Figure 11 The Divisions of the Defence Budget by Principal Headings 1988-89



Note

[1] Percentage of equipment expenditure based on the last five years.

Figure 12 An Analysis of Defence Resources (1988–89) by Major Programmes[1]



Notes

[1] A more detailed functional breakdown of the defence budget is given in Table 2.3 of Volume 2; the manpower devoted to each function is set out in Table 4.2 and Table 4.3.

[2] The percentage in 1987-88 was 3.1, not as incorrectly printed in last year's Statement.

identification of further potential candidates will depend on the experience gained in working up these initial proposals.

511. The Ministry's aim for the non-nuclear research establishments is to devise a framework of clear and precise aims, within which the management can operate with greater efficiency and which will allow greater flexibility to exploit the considerable intellectual and physical assets of these establishments. This is currently the subject of a feasibility study. In the case of the Meteorological Office, the proposal is an extension of the existing policy of developing greater managerial responsibility and increasing commercial independence. Much planning remains to be done, but the aim is to achieve agency status for the Meteorological Office in 1990. The Trade Unions have been informed of these proposals and assured that they will be fully consulted.

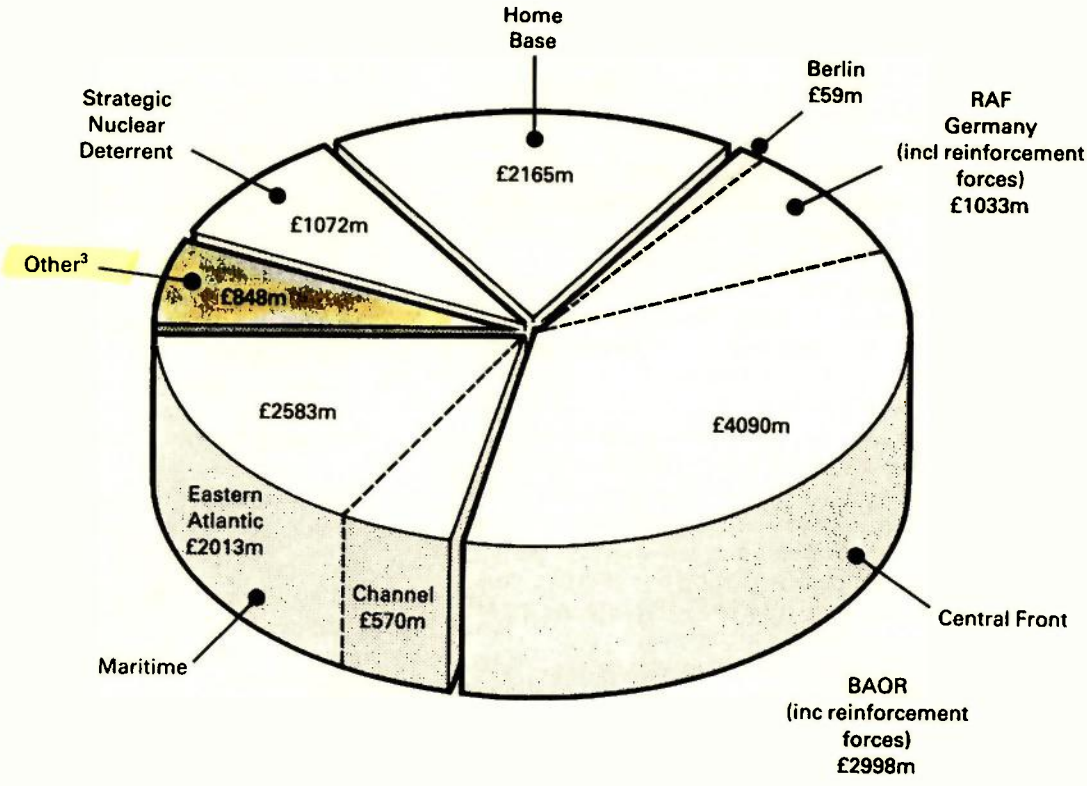
PERSONNEL

The Services

512. The manning position in the armed forces is broadly satisfactory, although there are shortfalls in certain areas. The Services face stiff competition from civilian employers, especially in those areas where there are national shortages of well qualified and able staff. Nevertheless, recruitment has reached 99% of the targets for both officers and other ranks; shortfalls in officer recruitment have been in specialist areas, for example medical officers.

513. Competition with the private sector is likely to increase over the next few years as demographic trends lead to fewer young people being available for employment, while the expansion of the economy

Figure 13 Estimated Cost of Defence Commitments for 1988-89 [1,2]



Notes

[1] **The total cost matches the total expenditure (£10,758 million) covered by the first six sections of Table 2.3 of Volume 2.**

[2] All the costs shown include directly attributable expenditure on capital works and equipment and are running costs for materiel and manpower. The costs of operational headquarters, bases and general operational support have been attributed *pro rata*.

[3] 'Other expenditure' in this diagram includes the costs of amphibious capability, the Allied Command Europe Mobile Force (air and land), the United Kingdom Mobile Force, and out-of-area commitments.

increases the number of jobs available. To help forestall this difficulty the Services are seeking to retain trained manpower for longer periods. This has the added benefits of ensuring a better return on our investment in training those retained, of reducing pressures on training organisations, and of making more trained and experienced manpower available for front-line tasks.

514. At December 1987, the annual rates of applications for premature voluntary retirement were some 3.6% of the trained strength for officers and 3.0% for other ranks. The proportion of those who actually left was running at annual rates of 3.1% for officers and 2.7% for other ranks. Current levels are fairly stable and compare favourably with previous years; but some concern remains.

515. The Government has ensured that Service pay has been kept broadly at a competitive level. The wide-ranging review of the armed forces' allowances, mentioned in last year's Statement, will ensure that they remain adequate and appropriate to the operational needs of each of the three Services.

516. Over the past year there has been wide publicity and understandable public concern about a series of incidents and allegations of bullying, ill-treatment and initiation ceremonies in the Army. This concern has been shared by Ministers and the Army Command at all levels; bullying and humiliating practices form no part of Service life, and are not tolerated. All soldiers are briefed on, and regularly reminded of, their right to make a complaint if they believe they have reason. They are further made aware of the procedures for so doing, including direct access to their commanding officers, and of the help available from unit families' and medical officers, padres and members of the Women's Royal Voluntary Service. All complaints are thoroughly investigated, and prompt disciplinary action is taken if they are substantiated.

517. Of 119 cases reported and investigated between January 1986 and mid-April 1988, the allegations in 57 have been found to be unsubstantiated. Investigations continue in 15 cases, and in a further 14 the judicial process has yet to be completed. Allegations in 33 cases, some of them serious, have been substantiated; these have been, or are being, dealt with by appropriate disciplinary action, including in certain cases imprisonment and dismissal from the Army. The available evidence does not show a rising trend in the incidence of bullying or ill-treatment of soldiers, nor does it support the view that this is a general or deep-seated problem. But the Army is certainly not complacent. Following a very full examination by Commanders-in-Chief, the Government outlined, in January 1988, a series of further measures to eradicate bullying. The measures include better supervision in training depots; more emphasis on man-management and the responsibilities of officers and NCOs to their men; a further examination of selection procedures for both recruits and NCO instructors at training depots; better use of volunteers who work with the Army; and the formal banning of all harmful initiation ceremonies.

Civilians

518. The Department continues to experience problems in recruiting and retaining civilian staff at many levels and in a variety of fields, including high quality administrators and specialists such as electronics engineers, staff trained in automatic data processing (ADP), and management accountants. There are also acute shortages of clerical and secretarial staff, especially in London and the south east; and problems in recruiting and retaining certain industrial grades, particularly craftsmen.

519. A number of initiatives have been taken to improve matters, including:

- a new flexible pay agreement covering 25,000 specialist staff, to give management more scope in tackling problems of recruitment and retention;
- incentive pay arrangements across the Civil Service to link the pay of senior grades to performance;
- the introduction of a new fast stream for high quality recruits to the defence science group, offering individual career development, training and accelerated promotion prospects simil to those enjoyed by fast-stream administrator nd engineers;
- the adoption of short-service contracts to attract additional specialists with specific skills and experience;
- a new, more dynamic, recruitment strategy, aimed at graduate scientists and engineers, which includes better advertising and recruitment literature, and visits to universities and career conventions;
- higher allowances for ADP and management accountancy staff;
- in the support grades, a drive to improve recruitment; employment of agency secretarial staff, clerks and typists; moving work out of London; and consideration of proposals to introduce local pay additions for staff i the hardest hit areas; and
- for industrial grades, consideration of measures to relate pay more closely to the local market rate.

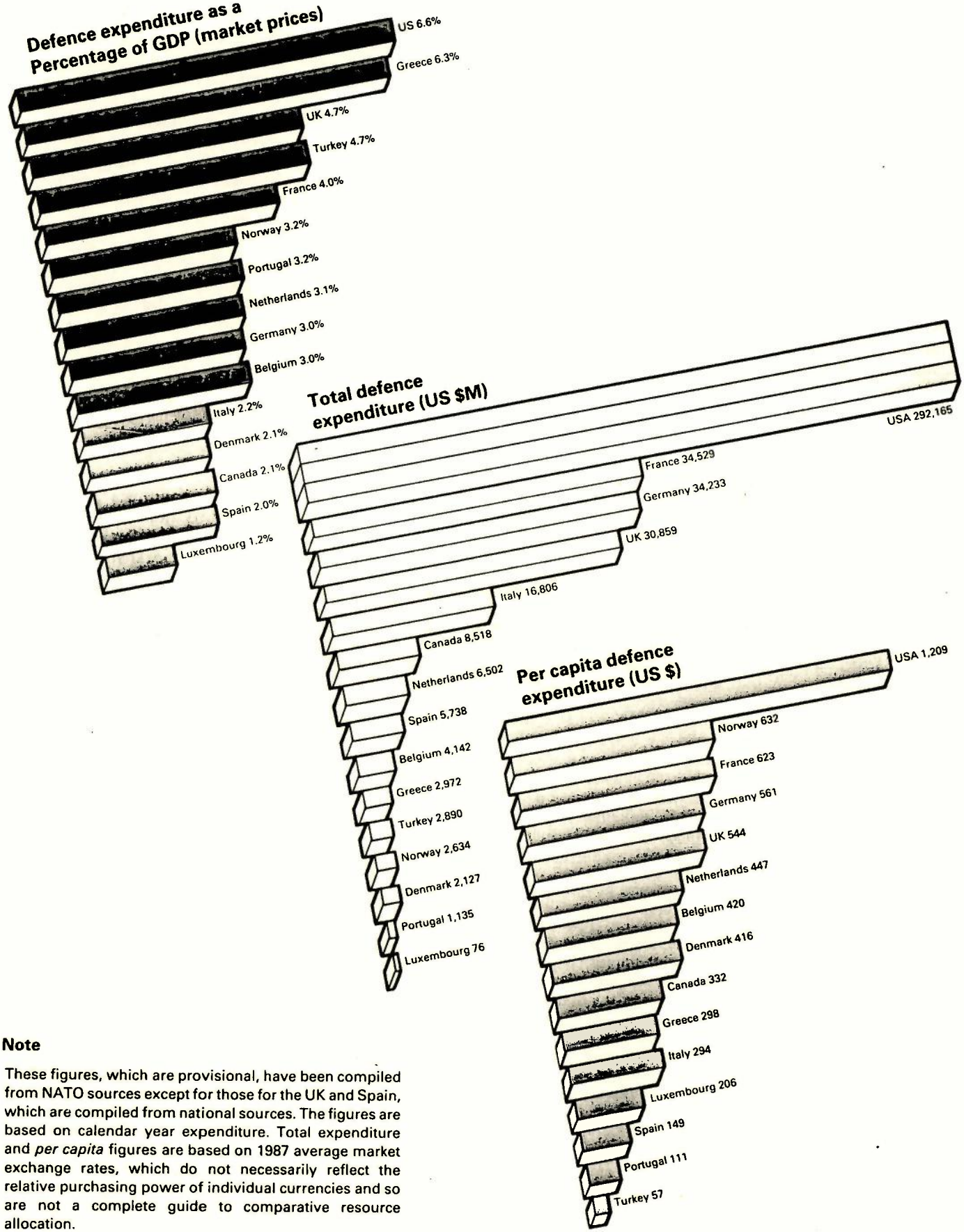
520. The Defence Engineering Service (DES) was launched successfully last year, when the first young engineers were recruited to the new fast stream. We are looking to build on this initial success by expanding the fast-stream entry to cover the sea systems area, by improving career development, training, and promotion arrangements, and by expanding our sponsorship of students reading for engineering degrees.

SUPPORT SERVICES

Defence Medical Services

521. We are pressing on with our efforts to get value for money in the provision of medical services. Contracts for dental technical work have now been placed at a saving of £125,000 a year. In the Falkland Islands, the temporary

Figure 14 A Comparison of Defence Expenditure: NATO Countries 1987



Note

These figures, which are provisional, have been compiled from NATO sources except for those for the UK and Spain, which are compiled from national sources. The figures are based on calendar year expenditure. Total expenditure and *per capita* figures are based on 1987 average market exchange rates, which do not necessarily reflect the relative purchasing power of individual currencies and so are not a complete guide to comparative resource allocation.

British Military Hospital at the Canache has been closed and we are using the recently opened King Edward VII Memorial Hospital at Stanley, sharing the cost with the Falkland Islands Government. The direct supply of drugs from manufacturers to Service hospitals and other defence medical establishments remains under consideration. The potential benefits, including faster delivery and cheaper storage and distribution, are having to be measured against a continuing need to stockpile and distribute drugs for operational purposes, where direct supply would not adequately meet our requirements.

522. To help reduce waiting lists at National Health Service (NHS) hospitals, we have reached an agreement this year with the Department of Health and Social Security that will enable local health authorities to make greater use of Service hospitals. Each year these hospitals treat, free of charge, 34,000 in-patients, 200,000 out-patients and 4,000 day patients referred to them by NHS general practitioners. The new agreement will enable additional patients to be treated against payment to the Ministry of Defence from Department of Health and Social Security funds.

Defence Statistics

1. Thirty-five members of the Government Statistical Service work in the Ministry of Defence, using their mathematical and data management skills to organise and interpret a wide range of information. For example, the Ministry's half million men and women are employed in a wide variety of jobs and locations, and are constantly on the move. Statistical expertise helps to monitor, report and forecast strengths by area and role so that manning levels can be planned and controlled.

2. A number of organisations provide support for the front-line troops, and the Financial Management Initiative (see paragraph 507) calls for measurement not only of the cost but also of the volume and quality of the services provided. During 1987-88 our statisticians have been developing new output measures to assist this process.

3. Developing new weapon systems at the forefront of technology can pose problems for management, since both costs and development timescales are potentially at risk. Statisticians provide defence planners with practical methods for assessing these variables, thus enabling decisions to be made on the level of risk involved in any new project.

4. The statisticians' other activities include economic and logistic forecasting, and surveying pay and conditions and hours worked. They also prepare the second volume of this Statement, which provides a comprehensive breakdown of trends in defence expenditure and resources.

Public Relations

523. The highlight of the year for public relations was the Prime Minister's meeting with Mr Gorbachev at RAF Brize Norton in December 1987, when the Defence Public Relations Staff provided facilities for 578 media representatives from around the world. As the INF negotiations progressed, they also arranged for the press to visit RAF Molesworth for the first time, and organised three further visits to RAF Greenham Common; and they provided briefings on the arrangements for verifying implementation of the INF Agreement.

524. Facilities were provided for six press visits to the Royal Navy's ARMILLA patrol; and in September 1987 the press were able to watch the progress of the four MCMVs on their way to the Gulf to support the patrol. Journalists were invited to all the major exercises of the year including PURPLE WARRIOR, where the presence, for the first time, of the Warsaw Pact observers in the United Kingdom attracted particular interest. Exercise KEYSTONE also received wide media coverage, both in the United Kingdom and in the Federal Republic of Germany. For the third year we have published, for free distribution, a booklet accompanying this Statement and designed to explain British defence policy to a wider audience.

The Defence Estate

525. The Ministry of Defence continues to review its land holdings regularly, to identify and dispose of surplus land. The estate is still getting smaller, despite the acquisition of additional land essential for the Army's training needs. In the future we expect the size of the estate to stabilise, further acquisitions of relatively low-value training land being offset by disposal of high-value land where efficiency and operational needs allow. We are, for example, working to rationalise our land holdings in high-value areas such as north-west London. Receipts from the sale of surplus land and buildings in 1986-87 were £75 million, compared with a target of £64 million, and in 1987-88 receipts of well over £70 million are expected (again against a target of £64 million).

526. In common with the whole of southern England, the defence estate suffered great damage to both buil gs and trees as a result of last October's gales; and the subsequent flooding in the west country did yet more damage. The total cost to Defence votes, including building repairs, replacement of trees and loss of revenue, is estimated at £8.6 million. Planting programmes over the next few years will include the replacement of trees lost in the storm.

527. As part of our contribution to the European Year of the Environment (EYE), we published a brochure entitled ***Defence and the Environment***, describing the varied conservation activities of the Services across the defence estate. Two of the main aims of EYE were conservation of the countryside and improvement of the urban environment. In pursuit of the first aim, conservation groups in defence establishments, with the help of the Property Services Agency, undertook special projects such as creating wetland, clearing scrub and planting hedgerows. Many thousands of trees were also planted, including, in one instance, a whole wood of native broad-leaf trees. Keeping the defence estate tidy is part of routine estate management, but a special effort has been made to clean up litter and remove eyesores.

528. We also welcomed the opportunity to participate in the Countryside Commission's National Parks Awareness Campaign in 1987 and we drew up a Declaration of Commitment to National Parks, in which we undertook to promote the aims of the park authorities, taking account of our essential defence needs. And we concluded a Declaration of Intent with the Nature Conservancy Council, designed to strengthen our already close relationship and to facilitate notification of Sites of Special Scientific Interest, of which the Ministry of Defence manages a large number.

529. There are over 500 listed historic buildings on the defence estate, and we take our responsibility for them seriously. Problems can occur when we no longer have a use for them. We have, therefore, established an informal advisory group, the Historic Military Buildings Committee, including experts from both the private and public sectors, to consider imaginative and sympathetic ways of using or disposing of historic buildings that are no longer required. Trust bodies, funded by Government endowments, have also been set up to maintain the fabric of historic buildings at the former Chatham dockyard and the Heritage Area in Portsmouth naval base.

The Meteorological Office

530. The Meteorological Office applies nearly half its resources to meet the requirements of the armed forces; and, as the national meteorological service, it provides free weather forecasts to the public. Last year's Statement described the range of services also provided on repayment to local authorities, industry and commerce (including civil aviation, which accounts for about a quarter of the Office's work). Further repayment services introduced during the last year include an automated weather forecasting service for the oil industry, particularly in the North Sea, and a separate marketing unit set up as a profit centre within the London Weather Centre to cater for the particular needs of the retail trade, including supermarkets and large stores. Receipts from these and similar repayment services totalled £23.6 million in 1986-87, of which £17.4 million was earned from services to civil aviation.

531. Warnings of the severe storm over southern and eastern England on the night of 15-16 October 1987 were issued to many specialist users of the Office's meteorological services (including the armed forces and the offshore oil industry) some hours before the storm. There was, however, much criticism of the adequacy of the warning given to the general public, and of the accuracy of the forecasting involved.

532. Sir Peter Swinnerton-Dyer, Chairman of the University Grants Committee, and Professor Pearce of Reading University were appointed to consider the internal report on this event carried out by the Director General of the Meteorological Office. They concluded that the warning was inadequate because uncertainty about atmospheric conditions in the Biscay area led to conflicting computer forecasts, and because it was not recognised that these forecasts would underestimate wind speeds over the United Kingdom. But no individual was seriously to blame for this. They recommended improvements in the training of forecasters, the use of more senior staff for forecasting, improved computer and associated facilities, and changes both in working methods and in the presentation of forecasts by the media. They also endorsed the findings and recommendations of the Director General's report, which dealt in particular with the need for more and better observations, for improved computer models and for a review of procedures for sending warnings of severe weather to emergency authorities. The recommendations of both reports have been accepted and will be implemented as soon as possible.

The Ministry of Defence Police

533. The changes in management and organisation of the Ministry of Defence Police (MDP), reported in last year's Statement, have been taken a stage further. In April 1988, the MDP Headquarters was reorganised along functional lines, separate branches being responsible for operations, support, and personnel and training. The Chief Constable has been given budgetary responsibilities for many of the costs of his Force, and the secretariat has been strengthened to assist with the management of these tasks. These changes are aimed at providing a better and more cost-effective service to the Department and other organisations that benefit from the MDP's services.

The Conventional Balance

1. An accurate assessment of the potential threat is no less important now than it has ever been. History furnishes many examples of military defeat arising from miscalculation of the enemy's strength. Each year we publish in this Statement a particular type of threat assessment, the balance between NATO and the Warsaw Pact of conventional and nuclear forces in Europe. The recent progress of arms control negotiations and the debate on defence policy in this country have served to focus attention on the conventional balance, so it is timely to consider the problems inherent in generating these force-level figures (and hence their accuracy), and whether the message implied by the numbers needs tempering by considerations such as the quality of equipment or its manning.

The Figures

2. As we have explained in past Statements, there are genuine problems in arriving at completely accurate figures. They include:

- **How to decide which forces to count?** The most straightforward approach might, at first sight, be to count each side's total forces world-wide. But a realistic global balance would not only be extremely difficult to draw up, it would also be largely irrelevant to our main concerns. For, short of a full-scale strategic nuclear exchange between the superpowers, any East-West conflict would be fought in Europe — the area that in any event most directly affects our own security. While, therefore, compiling global balances can be an interesting academic exercise, our aim has been to focus as far as possible on the forces that would be most relevant to a war in Europe. That is why this Statement covers not only the forces on the Central Front, which would be involved immediately in any European conflict, but also forces in the whole of Europe from the Atlantic to the Urals, which could be deployed quickly to the Central Front, or which could be involved early in any fighting on the northern and southern flanks.

- **How to count accurately?** The Warsaw Pact has over the years maintained tight secrecy about all aspects of its military forces. For example, it has consistently refused to discuss its own force levels in MBFR negotiations over the last 15 years, and only last year admitted for the first time to having a chemical warfare capability. Counting its forces cannot, therefore, be an exact science. Large items, such as ships, are easy to count; smaller ones, such as tanks and artillery pieces, less so; while others, such as anti-tank guided weapons, are almost impossible to count accurately. Similarly, it can be relatively easy to identify missile launchers, but not the number of spare (or reload) missiles available.

- **Where to draw the line?** Arbitrary lines have to be drawn between, say, frigates and patrol boats, or tanks and armoured reconnaissance vehicles. Putting a border-line case into one category rather than another could have a significant effect on the resulting balance. Similar problems can be caused by differing interpretations of the readiness states of certain units on both sides, and by uncertainties about where specific units are normally based.

3. There is thus obvious scope for assessments to differ, either because different counting rules have been applied or because interpretations of the available evidence vary. Nonetheless, the figures produced by the most reputable independent bodies present broadly the same picture of Warsaw Pact numerical superiority (although, for the reasons explained above, they may differ in detail).

The Technological Gap

4. It is sometimes argued that Warsaw Pact numerical superiorities can be discounted because they are offset by NATO's technological lead. Certainly the West still has a lead in many areas; but it is being eroded by the continuing deployment of new Soviet weapons with improved flexibility and performance. And, although the West is often ahead in the race to develop technologies, the Soviet Union is often quicker to apply and deploy them, as has been demonstrated by the introduction of explosive reactive armour for tanks, an idea first developed in the West but now widely applied by the Soviet Union.

5. In practice, both East and West design weapons to reflect different needs, resources, and approaches to problems, greatly complicating attempts to compare their capabilities. The Soviet Union, for instance, requires large numbers of rugged and relatively uncomplicated weapons for use by conscript forces, exploiting the bias of the Soviet bloc economies towards heavy engineering; while in the West we seek to exploit our technological strengths to minimise the diversion of manpower from the productive economy to defence.

6. In general, Soviet design philosophy has emphasised three main features:

- **Simplicity**. Simple designs can be durable, cheap, and easy to produce, operate and maintain. But simplicity often also reflects technological lag, and may carry a penalty of lower combat capability, or less flexibility.

- **Standardisation**. Weapon components are, wherever possible, interchangeable, and existing designs and technologies are adapted for new purposes. This approach can be applied in practice because the Soviet Union can impose standard equipment on its Warsaw Pact allies.

- **Evolution**. The Soviet Union often adopts an evolutionary approach to weapon development; the Kalashnikov assault rifle, for example, which was based on a wartime German design, has evolved by stages into the essentially similar but modern AK-74. By contrast, the West's approach has been to introduce new models, each representing a distinct new generation of technology.

7. The most critical Soviet weakness lies in the electronics sector. Here the inability to produce enough high quality micro-electronic components not only limits the technology that can be incorporated in new weapon systems, but has also inhibited the exploitation of automated design and manufacturing techniques. The West also leads in a number of other key technologies, including electro-optical sensors (such as infra-red), robotics, signal processing, telecommunications (including fibre-optics) and signature reduction (stealth). The Warsaw Pact is roughly equal to the West in aerodynamics, conventional and nuclear warheads, and directed energy (lasers); and it is catching up in fields such as guidance and navigation, new materials, propulsion, radar sensors and submarine detection. The Soviet Union is probably ahead of the West in specific charged-particle devices, some areas of high-energy physics, the use of titanium for submarine construction, and the development of mobile ground-based long-range ballistic missiles.

8. The Western technological challenge has led the Soviet Union to increase the planning priority given to science and technology, to remove bureaucratic barriers between research, development and production, and to collect Western military technology through its intelligence and trading agencies. Technology transfer from West to East has helped it to reduce development costs and allowed it to respond rapidly to Western technological improvements. In the paragraphs that follow we look at the implications of this approach in key equipment areas. We have concentrated on ground and air forces to the exclusion of naval forces, because the former are the areas of offensive capability addressed in conventional arms control negotiations.

The Quality of Equipment

9. The complexities of comparing the capabilities of specific equipments are well illustrated in the case of **tanks**. Both the Warsaw Pact and NATO have a large variety of different tank models in service; this, together with differences in design philosophy, makes comparisons difficult. It would, however, be untrue to claim that NATO has an advantage in the quality of its tanks across the board. This may have been true in comparison with some of the older Soviet tanks, such as the T-55 or T-62, when they were introduced. But many of these have been modernised and upgraded with new gunnery control systems, and improved ammunition and armour, which enable them to fulfil a useful role on the battlefield.

10. Modern Soviet tanks, the T-64A, T-64B, T-72 and T-80, are as capable as the latest NATO tanks, the M-1 (US), Leopard II (FRG) and Challenger (UK). Their armour, supplemented by explosive reactive armour, provides protection comparable to and often higher than that of Western tanks. They have a 125mm gun, a larger calibre than those mounted on NATO tanks; and the T-64B and T-80 can fire anti-tank missiles from the gun barrel. This may give Pact tanks a slight edge in fire power, but it needs to be set against a continued NATO lead in gunnery control, target acquisition and night-vision systems.

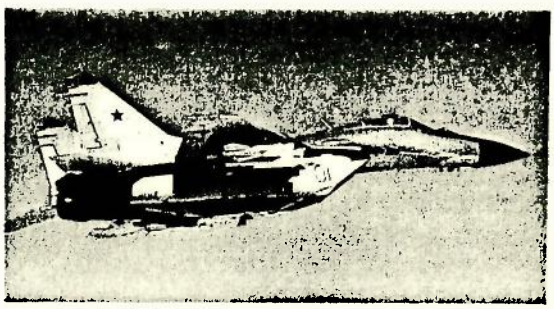
11. Of the 17,000 Warsaw Pact tanks on the Central Front (see Figure 15), over half are of the modern types — that is, more than the *total* number of NATO tanks in the area. Among the Soviet forces in the German Democratic Republic, the proportion of modern tanks — 6,000 out of 7,000 — is even higher. If the comparison is extended to include Europe from the Atlantic to the Urals (see Figure 16), the Warsaw Pact retains the advantage: more than half of the 51,000 Pact tanks deployed there are modern, compared with NATO's total of 17,000 tanks.

12. The Warsaw Pact's superiority in **artillery**, in quality as well as quantity, is not seriously disputed. Its 3:1 advantage on the Central Front reflects both the Soviet army's historical emphasis on firepower in its operational doctrine, and its determination to produce purpose-built mobile artillery systems for all formations from Front down to Regiment. The

total figures for the Central Front include over 4,000 2S-1 (122mm) and 2S-3 (152mm) self-propelled guns deployed with Warsaw Pact forces, compared with a NATO holding of about 1,900 generally older and less capable guns in the same category. And, while the West probably still enjoys an advantage in the range of its medium guns and howitzers and retains its lead in terminally-guided sub-munitions, improvements in Warsaw Pact ammunition over the next few years are likely to reinforce still further the effect of the Warsaw Pact's numerical superiority, both by improving the sustainable rate of fire per barrel and by increasing lethality.

13. NATO's introduction of the 12-tube MLRS will narrow the gap to some extent. NATO plans to deploy about 750 of these systems and the programme is now under way (see paragraph 606). But the Warsaw Pact has some 1,500 such systems already in service on the Central Front, including the most modern 16-tube 220mm BM-27.

14. The Warsaw Pact has also been improving its **air forces**. For example, hundreds of the latest generation of Soviet fighter aircraft, the Flanker and Fulcrum, have been brought into service over the past few years, and they are broadly comparable to the US F-15, F-16 and F-18 aircraft. In technological terms, the West still has a lead of about five years, but the gap is closing. The new aircraft represent a major increase in capability when compared with their predecessors; they are equipped with look-down/shoot-down radar and improved missiles.



Soviet Mig 29 fighter, codenamed 'Fulcrum'

The Quality of Men

15. The superior training of NATO's armed forces is often cited as an important counter-weight to the Warsaw Pact's numerical advantage; and there is no doubt that one of NATO's strengths lies in the professionalism and versatility of its Servicemen. NATO forces have a lower proportion of conscripts in their ranks, and their Servicemen are generally better educated and more resourceful.

16. But such comparisons can be misleading. Soviet military doctrine (see page 5) does not require the soldier in the field to show initiative, but rather to carry out certain set battle drills quickly and efficiently. Most Warsaw Pact conscripts spend two years (compared with the NATO average of one year) learning to do just that.

17. Warsaw Pact plans are as well rehearsed as NATO's. For 1988, for example, under the terms of the Stockholm Document, the Warsaw Pact declared 22 exercises involving 13,000 or more soldiers, compared with NATO's 12. Major exercises (ie those involving 100,000 or more troops) are rarely held by either side, but both NATO and the Warsaw Pact conduct frequent command post exercises to rehearse their headquarters staffs in the procedures for moving and controlling large numbers of men and equipment in action.

Striking a Balance

18. We have focused so far on the quality of equipment and manpower. But there are other factors that would affect the outcome of any conflict, and where NATO is often at a disadvantage compared with the Warsaw Pact. The free commitment of NATO's 16 members gives the Alliance an innate strength that the Warsaw Pact lacks; but this has been achieved at a price. NATO's command structure is relatively complex, to ensure that all NATO members are involved in important decisions; at the same time the forces committed to NATO retain their national characteristics and are not all tailored to an exclusively European role. In contrast, the command structure of the Warsaw Pact is in effect that of the Soviet Union, offering obvious advantages of command and control and the potential to react quickly to events; unlike NATO, all Warsaw Pact forces are structured, trained and equipped to follow a single clearly defined military doctrine. And the greater diversity of national equipments deployed by NATO forces, all requiring their own spares and logistic support, could create operational problems for the Alliance not shared by the Warsaw Pact.

19. Nor is geography on NATO's side. Unlike the Warsaw Pact, the Alliance with its limited territory cannot trade space for time in order to concentrate its forces against an attack. The Pact's supply lines for men, equipment and materiel are relatively short and overland, compared with NATO's reliance on transatlantic reinforcement (see page 64). And not least, by committing itself never to be the first to use force, NATO has eschewed the military

advantage that the initiative confers. A potential aggressor can select the time and place of his attack and mass his forces to achieve overwhelming local superiority in numbers, while a defender can only seek to respond before his defence is irretrievably disrupted.

20. Qualitative factors such as those discussed in this essay are scarcely susceptible to objective measurement; and attempts to produce statements of the conventional balance weighted to take such considerations into account rarely command universal approval. Their implications for our assessment of the threat facing NATO must therefore be a matter of judgement. But those who argue that we can afford to discount the numerical superiority of Warsaw Pact forces do so by looking selectively at those areas where NATO enjoys some qualitative advantage. And judgements about relative quality are often exaggerated: older Warsaw Pact tanks, for example, are more easily written off on paper than on the North German plain. A more balanced view would be that qualitative factors, as this essay illustrates, are often a matter of fine distinctions, and that they work both ways since, in any conflict, NATO would suffer from significant disadvantages compared with the Warsaw Pact. So, although we must take quality and similar considerations into account, it is a false and dangerous delusion to discount the reality of the numbers.

The Forces of East and West

CONVENTIONAL FORCES

601. The signing of the INF Treaty last December served, once again, to highlight the importance of tackling the disparities in conventional forces in Europe between NATO and the Warsaw Pact. Assessing the conventional balance is a complex task, for reasons explained on page 56. But an objective assessment is essential both for determining the defence effort required of the West, and as a prerequisite for the negotiation of conventional force reductions.

602. The conventional forces of France and Spain are included on the NATO side, as indicated, in the comparisons that follow. But these countries do not participate in NATO's integrated military structure.

Land and Air Forces

603. The evidence available to us continues to show a sizeable Warsaw Pact numerical superiority in military force. Figure 15 shows the conventional forces of NATO and the Warsaw Pact in place on the Central Front — that is, NATO forces in the Benelux countries and the Federal Republic of Germany, and Warsaw Pact forces estimated to be in Poland, Czechoslovakia, and the German Democratic Republic. Figure 16 gives a broader picture of conventional forces in place from the Atlantic to the Urals. For the purposes of this Statement, that includes forces located in the 14 NATO countries in Europe, and Warsaw Pact forces in Eastern Europe and the 11 military districts of the Soviet Union west of the Ural mountains.

Developments in Warsaw Pact Forces

604. The continuing modernisation of Warsaw Pact **ground forces** during the past year has been accompanied by some restructuring. And technological advances have continued to reduce the superiority of NATO equipment (see page 56). Deliveries have continued of new equipment such as the T-80 tank and the BMP-2 armoured infantry combat vehicle, which benefit from improved mobility, firepower and armoured protection (including reactive armour in the case of the T-80). There have been increases in holdings of self-propelled artillery, for example the 2S-3, 2S-7 and 2S-9, of tactical surface-to-air missiles (SAMs), and of short-range surface-to-surface ballistic missiles (SRBMs), such as the SS-21 capable of delivering improved conventional warheads with greater accuracy. Recent organisational changes have included some regrouping of divisional helicopters, which will improve operational capabilities and give commanders more flexibility in the field. In addition, the Pact's capability for close air support of ground forces has been enhanced by further deliveries of the Hind attack helicopter and the Frogfoot ground-attack aircraft. Hardened command, control and communication systems, together with improved computer data processing and fire-control systems, are now comparable to Western systems.

605. Replacement of the **air forces'** older fighters by Fulcrum and Flanker has continued. These modern agile combat aircraft, with significantly improved avionics, enhance the Pact's ability to conduct deep-ranging offensive air operations and to support ground and naval forces. Soviet air defence capabilities have also been improved markedly by the combination of Flanker and Foxhound fighters with the Mainstay airborne early warning aircraft, which extends Soviet air defence boundaries especially against low-flying targets. New training programmes for aircrews are also being introduced to complement these improvements in equipment.

NATO Forces

606. NATO countries have also introduced new equipment for their **ground forces** during the year, both through replacement programmes and additional purchases. For example, the NATO tank fleet has been strengthened by the introduction of further Leopard II, Challenger, AMX30-B2 and improved M-1 Abrams tanks. At the same time, progress has been made with programmes to enhance the capability of existing tanks by retrofitting advanced fire-control systems and improved armour. NATO infantry's battlefield mobility continues to be upgraded by the acquisition of new armoured vehicles such as the Bradley M2/M3, VAB and Warrior. During the year, the United States completed the first stage of fielding MLRS: one battalion for each division with an additional battalion for each corps. Several other NATO nations took delivery of their first MLRS at the start of a programme that will greatly improve the range, accuracy and effectiveness of NATO artillery.

607. The anti-armour capabilities of NATO ground forces are being increased by the introduction of significant numbers of anti-armour guns, anti-armour missile launchers of the Milan and TOW types and enlarged ammunition stocks. Operational and tactical flexibility is being improved by the introduction of more combat and heavy-lift helicopters in direct support of ground forces.

608. NATO **air forces** continued to introduce new combat aircraft during the year in both air defence and ground-attack variants, mostly of Tornado, Mirage and F-16 types. Existing aircraft continue to be updated by the

addition of improved avionics and modern weapons such as AIM9L (Sidewinder) and the JP 233 runway denial system; aircraft survivability is being enhanced by improved electronic countermeasures and radar-warning systems. In addition to Patriot SAM deployments under way in the Central Region, airfield defences are being strengthened by the introduction of more point-defence SAM systems and hardened aircraft shelters.

Maritime Forces

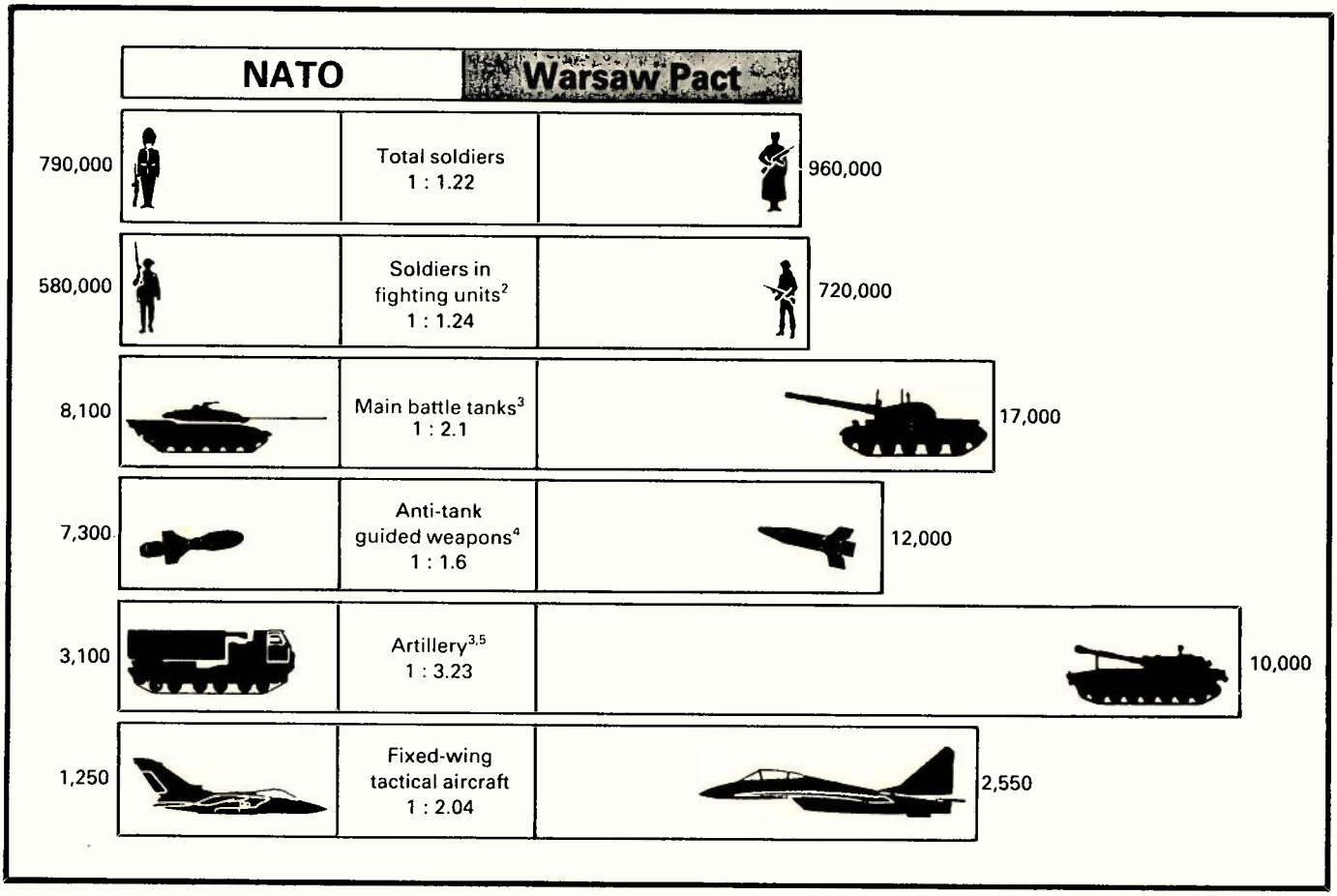
609. Figure 17 shows the principal naval forces of NATO and the Warsaw Pact normally located or based in the North Atlantic and seas bordering Europe. Ships and submarines could be deployed anywhere in this area, but forces have been divided according to sea or fleet areas relating to their home bases.

610. The numerical balance does not, however, tell the whole story. At sea, NATO's mission to protect the Alliance's reinforcement and resupply lines requires proportionately larger numbers of surface escorts, hunter-killer submarines and aircraft than the Warsaw Pact would need to threaten them. The conventional wisdom, applicable to land warfare, requiring an attacker to outnumber a defender is thus reversed. Both world wars have demonstrated the damage that can be caused by a relatively small number of submarines, and the potential threat posed by the Soviet submarine fleet is on a far larger scale than any we have faced before.

Developments in Warsaw Pact Naval Forces

611. Soviet naval deployments away from their home fleet areas have steadily reduced over the last two years,

Figure 15 The Current Balance of Forces on the Central Front [1]



Notes

[1] Covers NATO forces in the Benelux countries and the Federal Republic of Germany, and Warsaw Pact forces estimated to be in Poland, Czechoslovakia and the German Democratic Republic. Includes French forces in the Federal Republic of Germany, which are not declared to NATO, but excludes the Berlin garrison.

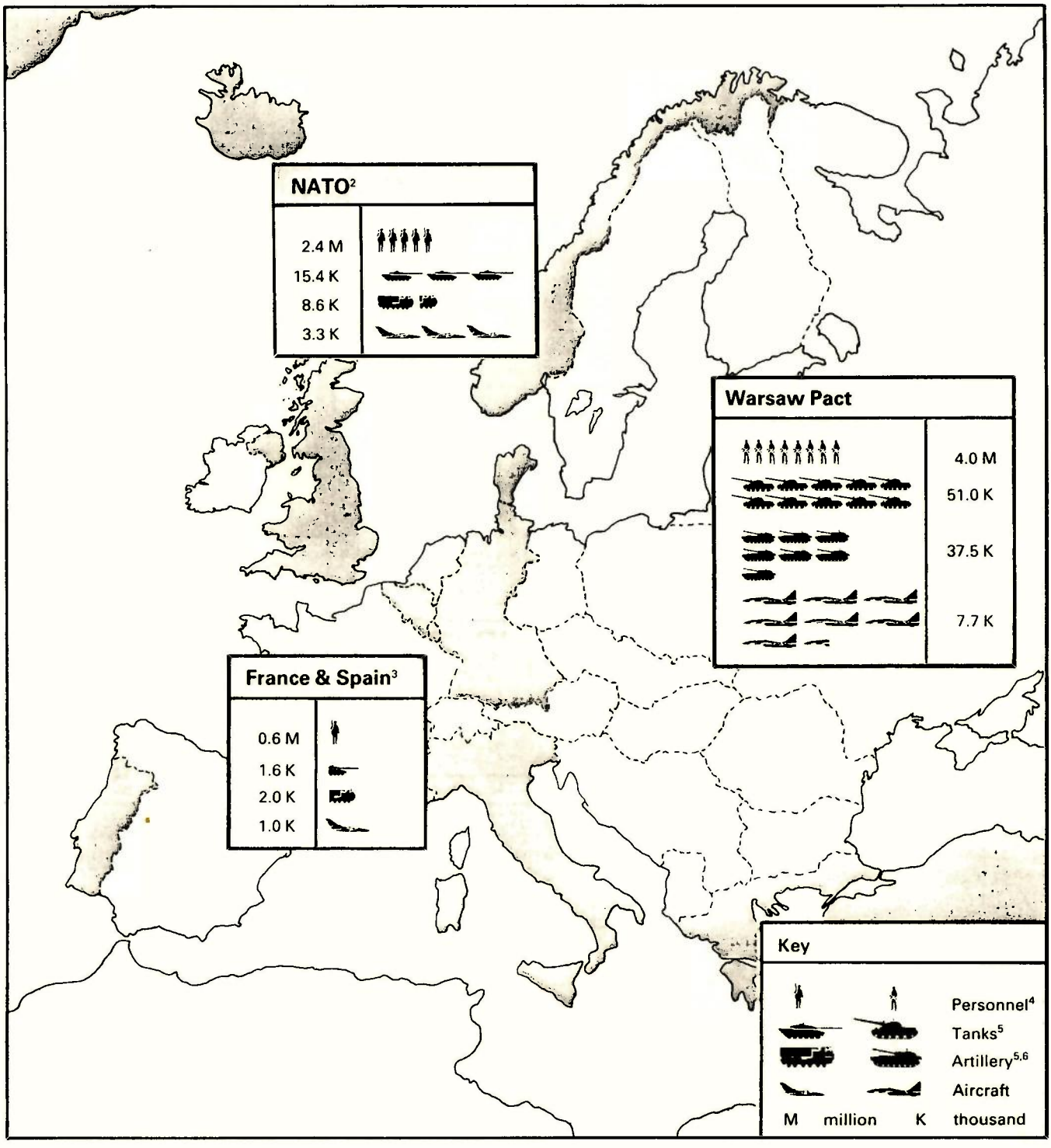
[2] Corresponds to a balance of 57 Warsaw Pact to 33 NATO divisions. Warsaw Pact divisions normally consist of fewer personnel than many NATO divisions, but contain more tanks and artillery.

[3] Figures for tanks and artillery exclude those in storage.

[4] Crew-served systems and helicopter- or vehicle-mounted systems, but excluding those that may be fired through the gun barrel of Soviet tanks.

[5] Figures for artillery exclude mortars.

Figure 16 The Current Disposition of Forces — Atlantic to Urals[1]



Notes

[1] For the purposes of this Statement the illustration includes the forces stationed in the 14 NATO countries in Europe, the six non-Soviet Warsaw Pact countries, and the 11 Soviet military districts lying west of the Ural Mountains.

[2] French forces in the Federal Republic of Germany are included in the NATO total.

[3] France and Spain are members of NATO but do not participate in its integrated military structure.

[4] Includes full-time military personnel serving with ground or air forces. Excludes reservists, naval personnel, marines, paramilitary or security forces and uniformed civilian services such as police or customs.

[5] Figures for tanks and artillery exclude those in storage.

[6] Figures for artillery exclude mortars.

apparently reflecting improved planning to make more effective use of resources. The result has been an improvement in combat efficiency and readiness, and fuller integration of naval forces into combined arms operations. Nevertheless, Soviet naval units continue to be deployed to those parts of the world, such as the Mediterranean and the Gulf area, where the leadership requires Soviet influence or concern to be apparent. The newer Soviet submarines, which are still being completed at an average rate of one every six weeks, are showing clear design improvements over their predecessors, narrowing the technological lead long held by the West; in particular, they are becoming quieter, making detection increasingly difficult. The introduction of new airborne command and control and anti-submarine warfare aircraft should also serve to enhance Soviet maritime capabilities. The strike/attack potential of the Soviet Naval Air Force continues to improve as more variable-geometry Backfire bombers enter service.

NATO Maritime Forces

612. Significant improvements are being made to NATO's maritime forces through the commissioning of new and more advanced vessels. While the United States continues its force expansion towards the ultimate goal of a 600-ship navy deployed globally, European NATO members introduced new ships and aircraft last year, including two Type 22 frigates, a Meko class guided missile frigate, a Minerva class escort, two Alkmaar class mine countermeasures vessels, a Sauro class submarine and some 25 maritime Tornado aircraft. In addition, there is a continuing programme to upgrade existing vessels, maritime aircraft, and weapons.

Weapons Production for Warsaw Pact Forces

	Estimated Total Production 1977-86[1]			
	Soviet Union	Non-Soviet Warsaw Pact	Total Warsaw Pact	Total NATO
Main Battle Tanks	24,400	4,500	28,900	11,550
Other Armoured Vehicles	42,000	6,800	48,800	19,150
Field Artillery, Mortars and Rocket Launchers	28,200	4,350	32,550	6,550
Tactical Combat and Interceptor Aircraft	8,250	1,150	9,400	6,750
Major Surface Warships	81	24	105	192
Attack Submarines	66	1	67	64

[1] Source: US Secretary of Defense's Annual Report to Congress for the Fiscal Year 1988. French and Spanish production is not included.

1. The high levels of production sustained by Soviet defence industries are necessary to maintain the combat effectiveness of a large standing army, modernise the holdings of strategic equipment reserves and sustain a role as a major arms exporter. Capital investment in the defence industries over the last decade has been running at high levels. But, as in NATO, the cost of developing and producing new weapons is increasing.

2. In the last five years new generation weapon systems have entered production in the Soviet Union, and their increasing complexity and cost have been offset in part by reduced production rates. Production of the latest tactical fighters and the newest nuclear-powered attack submarines is below levels previously sustained. Fighter production fell sharply with the decline of the large and long-running Flogger programme, but is now expected to grow slowly as output of the new generation fighters, Fulcrum and Flanker, increases. The overall output of ground forces' equipment, however, is not far short of the long-term average, despite the introduction of new more capable vehicles such as the gas turbine-powered T-80 tank.

3. Weapons production in the non-Soviet Warsaw Pact countries is small compared with the Soviet Union and concentrated mainly on the less demanding designs of ground forces' equipment, minor naval vessels and transport helicopters and aircraft. Even so, Poland and Czechoslovakia between them produce many more tanks each year than does the United Kingdom. And their output is increasing now they are producing Soviet T-72 tanks under licence.

already in place would be increased in strength as reservists became available after mobilization. NATO forces that, in peace, are based outside the Federal Republic could also be deployed to meet any threat on the Central Front. In addition, although France does not participate in NATO's integrated military structure, some 50,000 French troops are based in the Federal Republic and could immediately be made available to support NATO.

3. The United States has defined its priority aim in reinforcing Europe as being the deployment of an additional six army divisions, and 60 tactical fighter squadrons, within ten days. Equipment for these divisions is already pre-positioned in Europe. Its remaining reinforcements would arrive in a longer time frame, SACEUR's target being to achieve this within 30 days. Not all these would necessarily be deployed to the Central Front, and some might be required for use outside the European theatre of operations.

4. On the Warsaw Pact side there are, in total, some 200 divisions west of the Ural mountains. Of these, in addition to the 57 on the Central Front, there are approximately another 65 in the remainder of Eastern Europe and the most westerly military districts of the Soviet Union, many of which could be brought into action immediately or within a short time; remaining units could form a further echelon of forces to back up and exploit attacks already launched by the forces further forward.

5. While not all of these would be used on the Central Front (just as not all of NATO's reinforcements would necessarily go there), a high proportion of these forces would be deployed to that area in wartime. The time taken to do this would vary depending on the levels of readiness of units and their distance from the combat zone. But many divisions are already at very high levels of readiness or capable of being mobilized within a few days; it would take 10-14 days to transport reinforcement divisions to the Central Front from the west of the Soviet Union. All Warsaw Pact forces west of the Urals are positioned within 3,000 km of the IGB. Pact lines of communication are thus shorter and (being overland) safer and faster than NATO's, which stretch twice as far back across the Atlantic Ocean.

NUCLEAR FORCES

Strategic Forces

613. Strategic forces are those whose range or type of delivery system allows them to undertake intercontinental attack. They include intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and heavy bombers equipped with bombs and air-launched cruise missiles (ALCMs). For the purposes of this comparison we have used the definition adopted in the SALT II Treaty.

614. Both the Soviet Union and the United States have, over the past year, continued to modernise their strategic forces. At the end of 1987, the **Soviet Union** had deployed about 100 of its mobile ICBMs, the SS-25. Another ICBM, the SS-X-24, which could carry up to ten warheads and is capable of being launched from either silos or mobile launchers, is close to initial deployment. The capability of the Soviet SLBM force continues to improve as more of the new Typhoon and Delta class nuclear-powered ballistic missile submarines (SSBNs) are deployed carrying the multiple-warhead SS-N-20 and SS-N-23 missiles. The Typhoon class SSBN is the world's largest submarine and is capable of carrying 20 SS-N-20 SLBMs. Five submarines in this class, and four Delta IV, have been completed so far.

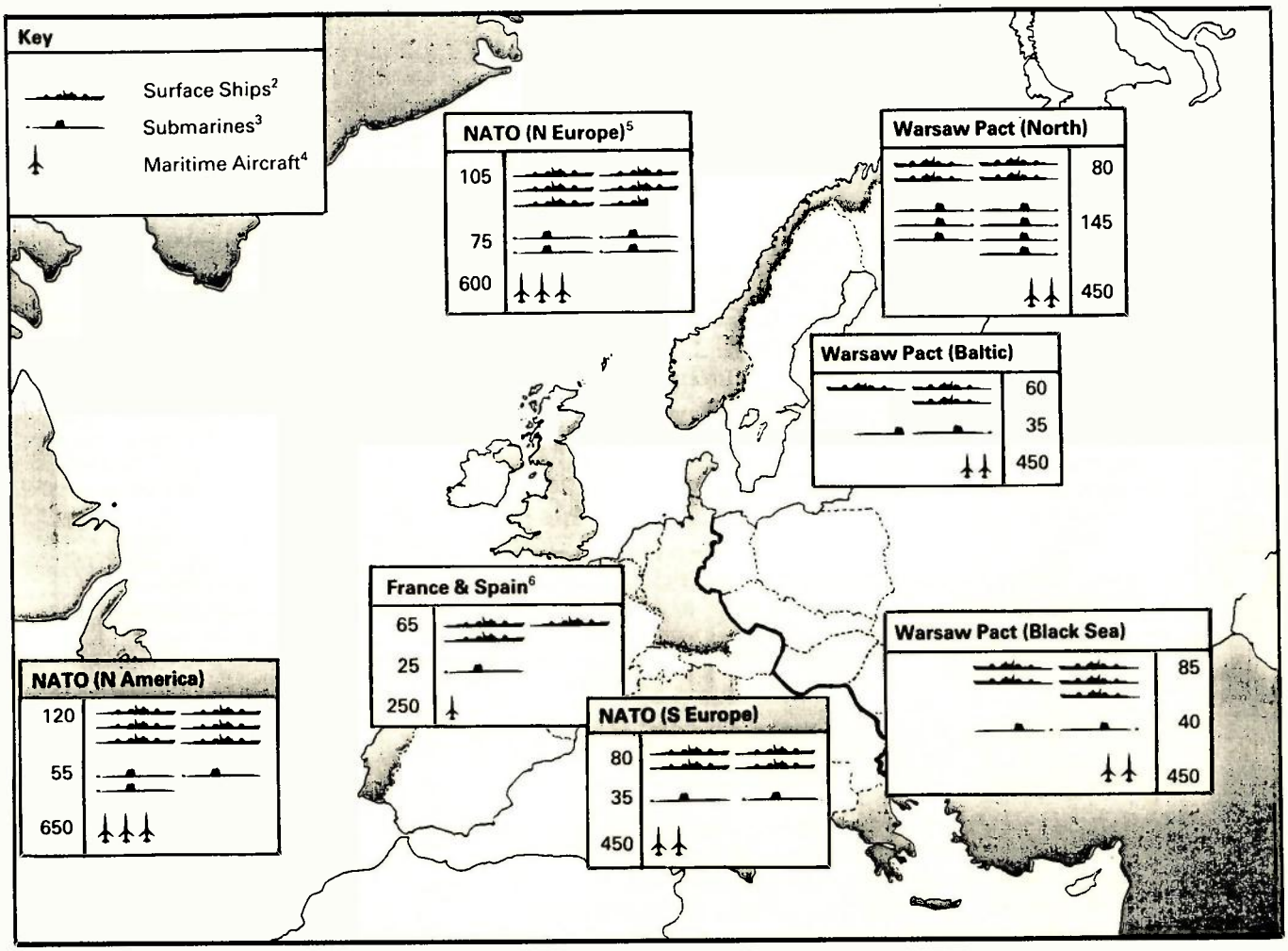
615. The Soviet Union is also developing a range of strategic cruise missiles for launch from ground, sea and air platforms. The AS-15 ALCM is already in service on the Bear H heavy bomber, and about 60 such aircraft are now in the inventory. Deployment of the new strategic aircraft, the Blackjack, could begin before the end of this decade. This aircraft will also be capable of carrying cruise missiles. The SS-N-21 submarine-launched land-attack cruise missile, having a maximum range of over 2,500 km, is now believed to be operational. and the longer-range SS-NX-24 is at an advanced stage of development. Although these systems are classified as strategic, they could all be deployed against NATO forces in Europe.

616. The Soviet Union is also continuing to improve its ground-based radars and satellite detection systems in order to enhance its capability for ballistic missile detection and to provide threat assessment information. Part of this programme includes the construction, near Moscow, of a large anti-ballistic missile (ABM) defence radar, as part of the world's only operational ABM system.

617. The **United States'** nuclear posture is similarly based on a combination of ICBMs, SLBMs and long-range bombers. The strategic modernisation programme, announced in 1981, sought to revitalise each leg of this triad. To this end, the United States has begun to deploy the MX, or Peacekeeper, ICBM and the B-1B strategic bomber. Trident (Ohio class) submarines each carrying the Trident C-4 SLBM are now being deployed at the rate of about one a year; eight Trident SSBNs have been launched so far. By the end of the decade, the US SLBM capability will be further improved by the introduction of the Trident D-5 SLBM. B-52 bombers have been modified to carry ALCMs; and the development of an advanced cruise missile and an advanced-technology bomber, both based on low-observable or stealth technology, is now under way. Sea-launched cruise missiles (SLCMs) are being deployed on a variety of ships and submarines.

618. Figure 18 illustrates the balance of strategic systems and shows that there is rough parity between the Soviet Union and United States in the numbers of delivery systems. As explained, however, in previous Statements, it is very difficult to estimate with any accuracy the number

Figure 17 NATO and Warsaw Pact Principal Naval Forces[1]



Notes

[1] Shows the principal naval forces of NATO and the Warsaw pact normally located or based in the North Atlantic and seas bordering Europe. Approximate numbers are shown.

[2] Principal surface combatants: frigates, destroyers, cruisers, aircraft carriers, excluding units in reserve.

[3] Excludes SSBNs and units in reserve.

[4] Includes shore-based and embarked fixed- and rotary-wing maritime aircraft.

[5] Includes US forces based in Europe.

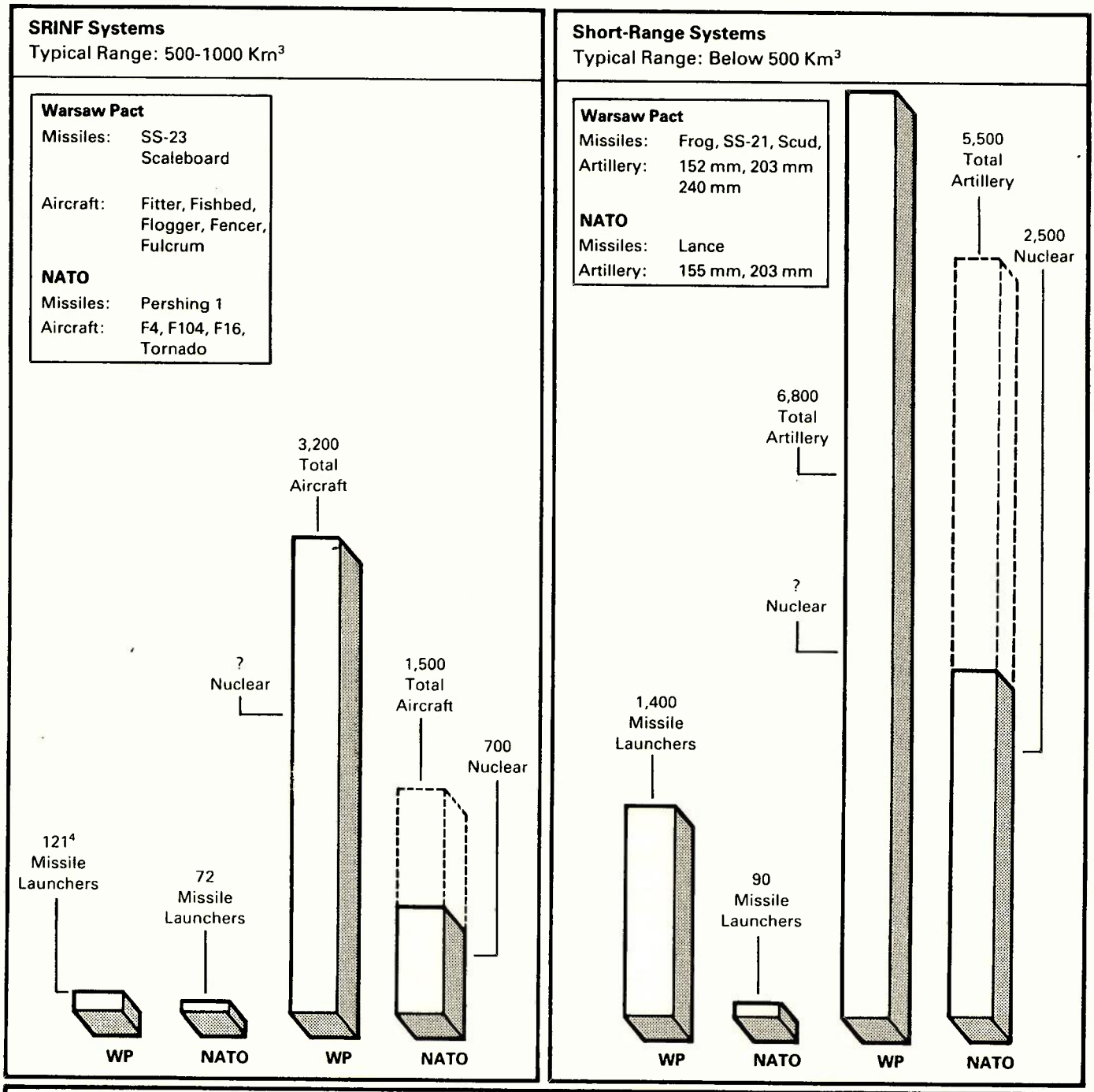
[6] France and Spain are members of NATO, but do not participate in its integrated military structure. Their naval forces are divided between the Atlantic and the Mediterranean.

Relative Reinforcement Capability

1. The forces in place on the Central Front (see Figure 15) amount to some 57 Warsaw Pact and 33 NATO divisions, most of them at high levels of readiness. Were war to break out in Europe, therefore, both sides could, if necessary, conduct operations for a short period without being reinforced. The Warsaw Pact, for example, has the capability to launch a surprise attack with its standing forces in the German Democratic Republic and Czechoslovakia; and NATO's forces would counter by implementing the initial stages of its strategy of forward defence (see page 15). But, if hostilities were to continue for more than a very few days, both sides would aim to reinforce their in-place forces.

2. NATO plans to reinforce continental Europe with some 15 divisions from Canada, the United Kingdom and the United States, while the units

Figure 19 The Balance of Shorter-Range Systems with Nuclear or Nuclear-Capable Variants — end 1987 [1,2]



Notes

SRINF Aircraft. This diagram shows all aircraft of types known to have a nuclear-capable variant. On the NATO side, the number assigned to the nuclear role is indicated by the coloured part of the column. The other aircraft shown are not assigned to the nuclear role, and could not be so used. The Warsaw Pact does not disclose similar information about its own aircraft, and it is not possible to produce reliable estimates. All Warsaw Pact aircraft of types known to be nuclear-capable are therefore shown.

Short-Range Artillery. This diagram shows all artillery pieces of types known to have a nuclear-capable variant. On the NATO side, the number certified for the nuclear role is indicated by the coloured part of the column. The other artillery pieces included are not available for use in the nuclear role. Similar information is not available for Warsaw Pact systems.

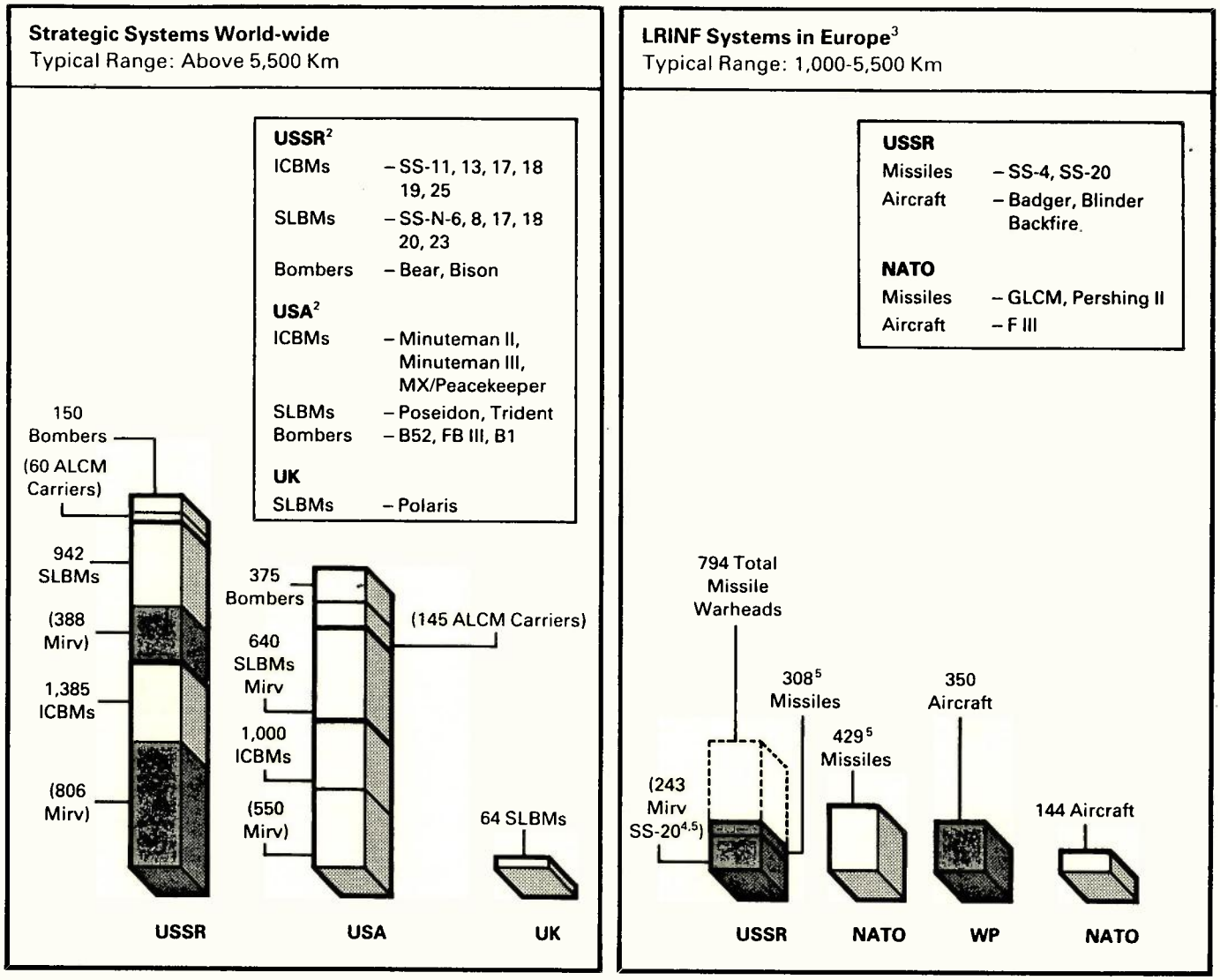
[1] Includes land-based systems deployed in Europe from the Urals westward.

[2] French systems are not included in this diagram. They comprise 80 Mirage IIIE and Jaguar aircraft and 30 Pluton missiles. The diagram does not include maritime systems.

[3] The range categories for SRINF and short-range systems differ from those used in previous Statements. The change has been made to achieve consistency with the INF Treaty.

[4] Deployed launchers at 1 November 1987 according to data contained in the Memorandum of Understanding of the INF Treaty.

Figure 18 The Balance of Strategic and LRINF Systems — end 1987 [1]



Notes

[1] French systems are not included in this diagram. They comprise 96 SLBM, 18 S3 missiles and about 35 Mirage IV Bombers.

[2] The United States and the Soviet Union are also deploying SLCM on a variety of surface ships and submarines.

[3] Includes land-based systems deployed in Europe from the Urals westward: excludes aircraft with a primary maritime role.

[4] Each SS-20 missile has three warheads.

[5] Includes deployed missiles and spare missile bodies at 1 November 1987 according to data contained in the Memorandum of Understanding of the INF Treaty.

of warheads actually carried by each system. Interpretation of the balance is further complicated by the asymmetry between the two sides' forces. For example, the Soviet Union places a heavy reliance on its ICBMs and has three times the missile throw-weight of the United States in this category of weapons. It could, therefore, attack all US land-based missiles while keeping part of its ICBM force in reserve. On the other hand, the United States enjoys an advantage in SLBMs which, though less accurate than ICBMs, are virtually invulnerable to a first strike, leaving the United States with the ability to retaliate.

Intermediate Nuclear Forces

619. Intermediate Nuclear Forces (INF) include all systems that fall between short-range (ie battlefield) and strategic forces. They comprise longer-range intermediate and shorter-range intermediate nuclear forces (LRINF and SRINF). LRINF systems have a range of over 1,000 km, while SRINF systems have a range of between 500 and 1,000 km. Figures 18 and 19 show the numbers of LRINF and SRINF forces as they were at the end of 1987, and include only offensive land-based systems deployed in Europe from the Urals westward. They exclude:

Chemical Warfare

1. The Soviet Union commands the world's largest, most comprehensive and advanced capability for chemical and toxic agent warfare (CW). This ranges from the research, production, and storage of lethal agents and chemical weapons to the protective systems required for their use. The Soviet Union has produced and stockpiled a wide variety of chemical agents and munitions and has a massive tonnage of nerve agent alone. These weapons very clearly represent a serious threat to NATO — a threat that has increased over recent years with improvements in Soviet CW capability.

2. The appalling and indiscriminate effects of chemical weapons have been seen in the Gulf conflict. Less widely understood are the effects of being forced to protect our troops against them on the battlefield.

3. British Servicemen are provided with a range of equipment to protect them against chemical attack. Protection for the individual Serviceman includes suits and respirators, monitoring equipment and medical aids. Where necessary and practicable, a filtered air supply provides collective protection, for example in the command centre of a destroyer, in the crew compartment of a tank, in portable structures on the battlefield or in key permanent buildings such as command and control centres. Our forces also operate detection equipment, which can monitor the atmosphere and warn when a hazardous concentration of chemical agent is detected. This equipment needs to be regularly updated to ensure that it remains effective against the agents likely to be used — and the pace at which new agents can be developed is a serious cause of concern.

Infantryman in full CW protective kit

4. But, despite this protection, our forces would be far less efficient when using it. On the battlefield, the mere threat of use by an enemy would require our troops to take defensive measures, so that they might have to fight in the equipment for very long periods. The protective suits in particular are cumbersome, impeding movement and vision and making the smallest task much more difficult. It is not easy to communicate, nor to read, write, study maps or give orders. Eating and drinking are awkward, slow and hazardous. The immediate effect is to sap both physical and mental stamina; and experience in training suggests that the fighting capacity of troops could be reduced by up to 50%. Resupply and repair, involving the transfer of stores and equipment from a clean to a contaminated environment, and *vice versa,* pose enormous problems of control and decontamination. Similar difficulties arise in providing medical support; to the problems of treating casualties caused by chemical weapons must be added the complications of chemically contaminated wounds and injuries. Clearly such a position has far-reaching implications for NATO's ability to undertake sustained operations. In contrast, a potential aggressor, who would know when he intended to attack and with what kind of agent, would have the advantage of being able to operate without protection until it was actually needed. Consequently conventional defence would become far more difficult and, in the absence of a credible Western chemical deterrent capability, the early use of nuclear weapons would become more likely.

5. The United Kingdom has had no chemical weapons since the late 1950s, nor do we plan to change that policy; our research programme is entirely dedicated to improving the protective measures outlined above. The United States halted production of chemical weapons in 1969, although it retained a limited retaliatory capability. This unilateral restraint by the West has not been matched by the Soviet Union, and only a very small proportion of the US stock is now militarily useful. In view of the severe military disadvantages presented by the Soviet CW capability, the United States has begun a modernisation programme to replace its own stocks with binary weapons stationed on US territory. Binary weapons produce the same agents as existing weapons in the US stockpile, but they are much easier and safer to store, handle and destroy. We believe that the US modernisation programme will underline to the Soviet Union the benefits of a negotiated ban, which we, and all NATO members, remain committed to concluding. In the absence of such an agreement, the US capability will help maintain the NATO strategy of deterrence through flexible response.

— aircraft and missiles based outside Europe, in the United States and in the Soviet Union east of the Urals;

— aircraft whose primary mission is maritime, such as those of the Soviet naval air forces and NATO aircraft with an anti-ship role;

— NATO sea-based nuclear systems, such as the Terrier surface-to-air missile, the ASROC and SUBROC anti-submarine missiles, air-delivered bombs and aircraft on US aircraft carriers;

— Warsaw Pact sea-based systems, such as SS-N-3, SS-N-7, SS-N-12 and SS-N-19 anti-ship cruise missiles, nuclear depth-bombs, surface-to-air missiles, and SS-N-5 non-strategic ballistic missiles on submarines deployed in the Baltic Sea; and

— air defence systems with a capability against air-breathing nuclear delivery systems. This is an area of massive Warsaw Pact superiority; they have, for example, almost 14,000 SAM launchers compared with NATO's total of about 2,000.

620. The INF Treaty is intended to eliminate globally all US and Soviet ground-launched missile systems in the LRINF and SRINF categories, deployed or otherwise (see Chapter 2). Of these, pending the treaty's implementation, 304 operational US GLCMs are deployed in the United Kingdom, the Federal Republic of Germany, Italy and Belgium, and 108 operational US Pershing II missiles are deployed in the Federal Republic. A number of GLCM and Pershing II spare missile bodies will also be eliminated. On the Soviet side, there are 243 SS-20 and 65 SS-4 missiles deployed in Europe, and 247 Scaleboard and SS-23. In addition, the Federal Republic deploys 72 Pershing 1A missiles (with US-owned warheads), which, although not covered by the treaty, will be phased out over the same timescale.

621. It is much more difficult to compare INF aircraft numbers, but the Warsaw Pact has many more dual-capable aircraft than does NATO. Moreover, the Warsaw Pact does not disclose how many of its aircraft are assigned to nuclear operations; we have therefore included in Figure 19 all Warsaw Pact shorter-range aircraft of types that could deliver nuclear weapons. Many of these aircraft are capable of carrying air-to-surface missiles (ASMs) with ranges up to several hundred kilometres and fitted with either conventional or nuclear warheads; and new ASMs are being developed. The number of NATO SRINF aircraft with a nuclear role, 700, is indicated by the coloured part of the column; the other aircraft shown, a further 800, are of similar types but are assigned for conventional use.

Short-Range Nuclear Forces

622. Short-range nuclear forces include artillery and missiles with a range less than about 500 km and are sometimes referred to as battlefield weapons. Figure 19 shows systems deployed in Europe from the Urals westward. On the Warsaw Pact side, the more accurate SS-21 short-range ballistic missile continues to replace Frog, and improved artillery is being deployed in greater numbers. The Warsaw Pact also has a large number of Scud missiles in service, with a range of about 300 km. The only short-range missile in this category assigned to NATO is Lance. As with tactical aircraft, artillery systems may also be dual-capable and we do not know precisely how many of the Warsaw Pact systems are intended for use in the nuclear role. Figure 19 therefore shows all Warsaw Pact artillery that could be used in such a role. For comparison, we also show the total number of dual-capable NATO artillery systems, and, in colour, the number that have been certified to deliver nuclear shells. The NATO numbers are higher than those shown in last year's Statement. There are several reasons for this. In particular, the previous total number, first published in the *Statement on the Defence Estimates 1985*, was based on the last set of figures produced by NATO. Since then, NATO countries have begun to substitute larger calibre artillery, which is nuclear-capable, for smaller calibre weapons, which are not, and we have updated our figures to reflect this. In addition, in line with the decisions taken at Montebello in 1983 and with SACEUR's subsequent study of theatre nuclear requirements, a higher proportion of dual-capable weapons have been certified for nuclear use. But this does not mean that the availability of nuclear shells has increased; as we make clear on page 3 , NATO now has 2,400 fewer nuclear warheads in Europe than in 1979.

SOVIET DEFENCE EXPENDITURE

623. The substantial improvement in Soviet military capabilities over recent years has been made possible by the high priority given to the defence sector in the allocation of resources. Expenditure on defence has grown in real terms by about 50% since 1970. The share of national economic output allocated to defence, at 15% of gross national product, far exceeds that of any NATO country.

624. Mr Gorbachev recognises that this defence burden is a major constraint on his plans to modernise and revitalise the Soviet economy and raise living standards. He has already made clear that he expects Soviet defence industries to operate more efficiently and to increase their manufacture of consumer goods and machinery for civilian industry. Given the number of new weapons now entering, or about to enter, production, we believe that only policy decisions to trim or abandon some programmes can prevent the burden of defence rising still further over the next few years. Except for systems given up under the INF Agreement, and despite the declared Soviet position on other arms control issues, we have as yet seen no evidence that such policy decisions have been taken.

Serial	Type/Class	No.	Operational or engaged in preparing for service or trials or training	No.	Undergoing refit or on standby etc
7	**MCMVs**				
	Minesweepers	2	*Soberton, Cuxton*	2	*Upton, Walkerton*
	River Class	12	*Waveney, Carron, Dovey, Helford, Humber, Blackwater, Itchen, Helmsdale, Orwell, Ribble, Spey, Arun*		
	Minehunters Ton Class	10	*Brereton+, Brinton, Bronington, Iveston, Kedleston, Kellington, Maxton, Nurton, Sheraton, Wilton*	3	*Kirkliston, Gavinton, Hubberston*
	Hunt Class	12	*Brecon, Brocklesby, Ledbury, Cottesmore, Dulverton, Middleton, Chiddingfold, Hurworth, Bicester, Atherstone, Berkeley+, Quorn**	1	*Cattistock*
8	**Patrol Craft**				
	Bird Class	5	*Cygnet, Kingfisher, Peterel+, Sandpiper+, Redpole*		
	Coastal Training Craft	15	*Attacker+, Fencer+, Hunter+, Chaser+, Striker+, Archer+, Biter+, Smiter+, Pursuer+, Blazer+, Dasher*, Puncher*, Charger*, Ranger*, Trumpeter*(v)*		
	Peacock Class	5	*Peacock, Plover, Starling, Swallow, Swift*		
	Gibraltar Search and Rescue Craft	2	*Cormorant, Hart*		
9	**Support Ships**				
	Submarine Tender	1	*Sentinel*		
	MCM Support Ship	1	*Abdiel*		
	Seabed Operations Vessel	1	*Challenger*		
10	**Royal Yacht/ Hospital Ship**	1	*Britannia*		
11	**Training Ships**				
	Fleet Tenders	4	*Manly+, Messina+, Milbrook+, Mentor+*		
12	**Ice Patrol Ship**	1	*Endurance*		
13	**Survey Ships**	8	*Bulldog, Fox, Hecate, Herald, Gleaner, Hecla, Roebuck, Beagle*	1	*Fawn*

Notes:

(i) Strength as at 1 April 1988. This table includes ships due for completion or disposal during the course of 1988-89; numbers of each type are not, therefore, an accurate indication of the ships available at any one time. Ships solely engaged in harbour training duties are not included.

(ii) All ships in serials 1—7 are assigned to NATO, or will be so assigned on becoming operational. Ships in remaining serials could be made available in support of NATO operations if national requirements permitted.

(iii) Ships marked * were under construction on 1 April 1988 and are planned to enter service during 1988-89.

(iv) Ships marked + are engaged partly on trials or training.

(v) Completion of Coastal Training Craft class delayed owing to contractual problems.

(vi) Ships approved during 1987-88 for disposal: Fife, Rothesay, Naiad, Aurora, Orpheus, Sealion, Stubbington, Wakeful.

The Strength of the Fleet

Table 1. Ships of the Royal Navy(i)

Serial (ii)	Type/Class	No.	Operational or engaged in preparing for service or trials or training	No.	Undergoing refit or on standby etc
1	**Submarines**				
	Polaris	3	*Resolution, Repulse, Revenge*	1	*Renown*
	Fleet	13	*Churchill, Conqueror, Courageous, Sovereign, Swiftsure, Superb, Splendid, Sceptre, Trafalgar, Turbulent, Tireless, Torbay, Trenchant* (iii)*	3	*Valiant, Spartan, Warspite*
	Type 2400	1	*Upholder**		
	Oberon Class	9	*Odin, Onslaught, Otter, Opportune, Olympus, Otus, Ocelot, Onyx, Osiris*	2	*Opossum, Oracle*
2	**ASW Carriers**	2	*Illustrious, Ark Royal*	1	*Invincible* (2)
3	**Assault Ships**	1	*Intrepid*	1	*Fearless*
4	**Guided Missile Destroyers**				
	Type 82	1	*Bristol*		
	Type 42	10	*Exeter, Birmingham, Southampton, Nottingham, Liverpool, Manchester, York, Gloucester, Edinburgh, Newcastle*	2	*Cardiff, Glasgow* (2)
5	**Frigates**				
	Type 22	11	*Battleaxe, Brazen, Boxer, Beaver, Brave, London, Sheffield+, Cornwall+, Coventry*, Cumberland*, Campbeltown* (iv)*	2	*Broadsword, Brilliant* (2)
	Type 21	5	*Amazon, Ambuscade, Active, Avenger+, Alacrity*	1	*Arrow* (2)
	Leander Class	16	*Euryalus, Penelope, Arethusa, Phoebe, Sirius, Minerva, Danae, Andromeda, Scylla, Achilles, Charybdis, Diomede, Apollo, Ariadne, Cleopatra, Jupiter*	2	*Hermione, Argonaut* (2)
	Rothesay Class	1	*Plymouth*		
	Navigation Training Ship	1	*Juno+*		
6	**Offshore Patrol**				
	Castle Class	1	*Dumbarton Castle*	1	*Leeds Castle*
	Island Class	7	*Alderney, Guernsey, Lindisfarne, Orkney, Shetland, Anglesey, Jersey*		

— Em construção

(2) Operações em Malvinas

Table 4. Naval Aircraft(i)

Serial	Role	Aircraft	Squadron No
1	**Air Defence/Recce/Attack**	Sea Harrier FRS1	800 801
		Sea Harrier FRS1/ Harrier T4	899
2	**Anti-Submarine**	Sea King HAS 5	810 814 819 820 824 826(ii) 706
3	**Anti-Submarine/ Anti-Ship**	Lynx HAS 2/3	815(ii) 829(ii) 702
4	**Airborne Early Warning**	Sea King AEW 2	849(ii)
5	**Commando Assault**	Sea King HC 4	845 846 707
6	**Aircrew Training**	Gazelle HT 2 Jetstream T 2/3 Chipmunk	705 750 —
7	**Fleet Support Search and Rescue**	Sea King Mk5 Sea King Mk4	771 772
8	**Fleet Training and Support**	Hunter T8/GA11 Canberra TT18	— —
9	**Support**	Sea Devon Sea Heron	— —

Notes:

(i) As at 1 April 1988. All these aircraft are declared to NATO, or could be made available in support of NATO operations.

(ii) Aircraft in these squadrons are deployed in flights of single and multiple aircraft.

Table 2. Ships of the Royal Fleet Auxiliary(i)

Serial	Type	No.	Operational or engaged in preparing for service or trials or training
1	**Fleet Tankers, Large**	4	*Olmeda, Olna, Olwen, Tidespring*
2	**Fleet Tankers, Small**	5	*Black Rover, Blue Rover, Grey Rover, Gold Rover, Green Rover*
3	**Support Tankers**	5	*Appleleaf, Bayleaf, Brambleleaf, Oakleaf, Orangeleaf*
4	**Fleet Replenishment Ships**	4	*Resource, Fort Austin, Fort Grange, Regent*
5	**Helicopter Support Ships**	2	*Engadine (ii), Argus*
6	**Landing Ships Logistic**	6	*Sir Bedivere, Sir Geraint, Sir Lancelot, Sir Percivale, Sir Tristram, Sir Galahad*
7	**Forward Repair Ships**	2	*Diligence, Stena Seaspread (iii)*

Notes:
(i) Strength as at 1 April 1988.
(ii) RFA *Engadine* is engaged in training and will be replaced by RFA *Argus* (ex *Contender Bezant*) on completion of her trials.
(iii) *Stena Seaspread* is on temporary charter.

Table 3. Royal Marines Commando Forces (i)

Serial	Type	No.
1	**Headquarters**	
	Commando Brigade Headquarters RM (incl Air Defence Troop)	1
2	**Commandos**	
	RM Commandos	3
3	**Artillery**	
	Commando Regiment RA	1
	Commando Battery RA (Volunteer)	1
4	**Engineers**	
	Commando Squadron RE	1
	Commando Squadron RE (Volunteer)	1
5	**Light Helicopter Support**	
	Brigade Air Squadron RM	1
6	**Logistics Units**	
	Commando Logistic Regiment RM	1
7	**Special Boat Service**	
	Squadrons RM	5
8	**Assault Squadrons** (Landing Craft)	1
9	**Mountain and Arctic Warfare Cadre**	1

Notes:
(i) As at 1 April 1988. Table does not include Royal Marine detachments on board Royal Navy ships.

	Regular Army				TA
	BAOR	Berlin	UK	Elsewhere	UK
Special Air Service					
Regiments			1		2
Army Air Corps (xii)					
Regiments	3		1(xiii)		
Honourable Artillery Company					
Regiment					1

Notes:

(i) Normal deployment locations as at 1 April 1988 are shown: no account is taken of temporary or emergency deployments.

(ii) Includes an Artillery Brigade Headquarters.

(iii) Includes three Engineer Brigade Headquarters.

(iv) 48 (Gurkha) Infantry Brigade.

(v) Includes the additional regiment for the remechanisation of 6 Brigade.

(vi) Includes one training regiment.

(vii) Two armoured reconnaissance regiments and three light reconnaissance regiments.

(viii) Artillery unit equipments consist of:

Field Regiments — depending on role, 105 mm light guns, 105 mm Abbot self-propelled (SP) guns, 155 mm FH70 towed howitzers and 155 mm M109 SP guns;

Heavy Regiment — 8 inch howitzers;

Missile Regiment — Lance;

Depth Fire Regiments — 175 mm SP guns;

Air Defence Regiments — Rapier and Blowpipe/Javelin.

(ix) Includes one Commando regiment, one parachute regiment and the Royal School of Artillery Support Regiment. The Commando regiment has one TA battery.

(x) The Queen's Gurkha Engineers.

(xi) Includes six battalions formed under the TA Phase II expansion.

(xii) Aircraft types are: Beaver, Alouette, Scout, Lynx, Gazelle.

(xiii) Includes one TA Squadron.

The Strength of the Army

Major Combat Headquarters(i)

	BAOR	Berlin	UK	Elsewhere
Headquarters				
Corps Headquarters	1			
Armoured Divisional Headquarters	3			
Infantry Divisional Headquarters			1	
Brigade Headquarters	9(ii)	1	20(iii)	1(iv)

Combat Arm Major Units (i)

	Regular Army				TA
	BAOR	Berlin	UK	Elsewhere	UK
Armour					
Armoured Regiments	12(v)		2(vi)		
Armoured Reconnaissance Regiments	2		3		5(vii)
Artillery (viii)					
Field Regiments	8		6(ix)		2
Heavy Regiments	1				
Missile Regiments	1				
Depth Fire Regiments (incl locating capability)	2				
Air Defence Regiments	2		1		4
Locating Regiments			1		
Engineers					
Engineer Regiments	5		5	1(x)	7
Armoured Engineer Regiment	1				
Amphibious Engineer Regiment	1				
Infantry					
Battalions	13	3	31	3	41(xi)
Gurkha Battalions			1	4	

Serial	Role	Aircraft or Equipment	UK	RAF Germany
7	**Air Transport**	VC10	10 Squadron	
		Hercules	24 Squadron 30 Squadron 47 Squadron 70 Squadron	
		HS125/Andover/ Gazelle Helicopters	32 Squadron	
		Pembroke/Andover		60 Squadron
		Chinook Helicopters	7 Squadron	18 Squadron
		Wessex Helicopters	72 Squadron	
		Puma Helicopters	33 Squadron	230 Squadron
8	**Tankers**	Victor K2	55 Squadron	
		VC10K2/3	101 Squadron	
		Tristar K1	216 Squadron	
9	**Search and Rescue**	Sea King Helicopters	202 Squadron	
		Wessex Helicopters	22 Squadron	
10	**Ground Defence**	Light Armour/Infantry Weapons	2 Light Armour Squadron RAF Regiment 15 Light Armour Squadron RAF Regiment 51 Light Armour Squadron RAF Regiment 58 Light Armour Squadron RAF Regiment 2503 (County of Lincoln) Field Squadron R Aux AF Regiment (iv) 2620 (County of Norfolk) Field Squadron R Aux AF Regiment (iv) 2622 (Highland) Field Squadron R Aux AF Regiment 2623 (East Anglian) Field Squadron R Aux AF Regiment 2624 (County of Oxford) Field Squadron R Aux AF Regiment 2625 (County of Cornwall) Field Squadron R Aux AF Regiment	1 Squadron RAF Regiment

Notes:

(i) This table shows normal deployment locations as at 1 April 1988. All front-line aircraft, together with certain training and communications aircraft, are assigned to NATO or could be made available in support of NATO operations. Additionally, at 1 April 1988 normal deployment outside the NATO area was as follows:

a. Falkland Islands. Phantoms, Hercules, Chinook helicopters, Sea King helicopters and Rapier. Hercules aircraft are also deployed to Ascension Island for the Falkland Islands airbridge.

b. Cyprus. One squadron of Wessex helicopters and one RAF Regiment squadron.

c. Hong Kong. One squadron of Wessex helicopters.

d. Belize. One flight of Harriers, one of Puma helicopters and a half squadron of RAF Regiment.

(ii) Also has reconnaissance role.

(iii) PRU — Photo Reconnaissance Unit.

(iv) These are Air Defence forces under NATO command in peace-time.

(v) R Aux AF — Royal Auxiliary Air Force.

The Strength of the Royal Air Force

Front-line Units (i)

Serial	Role	Aircraft or Equipment	UK	RAF Germany
1	**Strike/Attack**	Tornado GR1	27 Squadron 617 Squadron	9 Squadron 14 Squadron 15 Squadron 16 Squadron 17 Squadron 20 Squadron 31 Squadron
		Buccaneer	12 Squadron 208 Squadron	
2	**Offensive Support**	Harrier	1 Squadron	3 Squadron 4 Squadron (ii)
		Jaguar	6 Squadron 54 Squadron	
3	**Maritime Patrol**	Nimrod MR	42 Squadron 120 Squadron 201 Squadron 206 Squadron	
4	**Reconnaissance**	Canberra PR9	1 PRU (iii)	
		Jaguar	41 Squadron	2 Squadron
5	**Air Defence**	Tornado F3	5 Squadron 29 Squadron	
		Lightning	11 Squadron (iv)	
		Phantom FG1	43 Squadron 111 Squadron (iv)	
		Phantom FGR2	56 Squadron (iv)	19 Squadron (iv) 92 Squadron (iv)
		Phantom F4J	74 Squadron (iv)	
		Bloodhound	25 Squadron (iv) 85 Squadron (iv)	
		Rapier	27 Squadron RAF Regiment (iv) 48 Squadron RAF Regiment (iv)	16 Squadron RAF Regiment (iv) 26 Squadron RAF Regiment (iv) 37 Squadron RAF Regiment (iv) 63 Squadron RAF Regiment (iv)
		Skyguard	2729 (City of Lincoln) Squadron R Aux AF Regiment (v)	
6	**Airborne Early Warning**	Shackleton	8 Squadron	

Department of Health and Social Security (DHSS): 522
Department of Trade and Industry: 419

E

Eastern Atlantic and Channel: 302
EH 101 helicopter: **24**, 414, 418, Table 5
Equipment collaboration: 408-415, Table 5
Eurogroup: 116
European Fighter Aircraft (EFA): 414, Table 5
European staff targets: 410
European Year of the Environment (EYE): 527
Executive Responsibility Budgets (ERBs): 508-509
Exercises: 303-307, Table 4
ALLY EXPRESS: 307
BOLD GROUSE: 307
CERTAIN STRIKE: 305, Table 4
DISPLAY DETERMINATION: 211
DRAGON HAMMER: 307, Table 4
ELDER FOREST: 304
FIRE FOCUS: 328
KEYSTONE: 211, 305, 524, Table 4
LIMA BERSATU: 328
OCEAN SAFARI: 306, Table 4
OUTBACK 88: 328
PURPLE WARRIOR: 211, 309, 328, **33**, 524, Table 4
RED FLAG: 305, Table 4
REFORGER: 305
SETIA KAWAN: 328
STARFISH: 328
TEAMWORK 88: 307
WINTER-CIMEX: 303-304
Explosive ordnance disposal (EOD): 325, 335

F

F-15 aircraft: **58**
F-16 aircraft: **58**, 608
F-18 aircraft: **58**
Falkland Islands: **30**, 327, 521
Faslane: **40**
Fearless, HMS: 310
FH 70: Table 5
Financial Management Initiative: 507, **54**
Financial Planning and Management Group: 509
Fincastle ASW competition: 306
First British Corps (1 (BR) Corps): **17**, 302, 305, **24**, 331
Five Power Defence Arrangements (FPDA): 328
Flanker aircraft: **58**, 605, **62**
Flexible response: 110, **5**, 221, **15**, **69**
Flight Safety: 318
Flogger aircraft: **62**
Follow-On Forces Attack: **16**
Forward defence: 110, 117, **15**
Foxhound aircraft: 605
Foxhunter radar: 316
France: 117, **15**, **17**, **36**, 415, 602, **69**
Frog missile: 622
Frogfoot aircraft: 604
Fulcrum aircraft: **58**, 605, **62**
Fujairah: **36**
Full-Width Attack Mine fuze: Table 6

G

Gazelle helicopter: Table 5
Geneva: 207, 217, 219, 221
Germany, East (Democratic Republic): 211, **57**, 603, **64**
Germany, Federal Republic of: 117, 211, **15**, **17**, 302, 305, **36**, 603, **64**, 620
Gibraltar: 302
Golan heights: 330
Gorbachev, M S: 102, 104-105, **9**, 207, 209, 523, 624
Gruinard Island: **42**
Gulf, the: 114, 120, 326, **35**, **69**, 611

H

Hague, The: 115
Harrier aircraft: 315, Table 3, 405, 414, Table 5, Table 6
Hassel, Herr von: **15**
Hawk aircraft: **23**, 421
Hel: 337
Hercules aircraft: 318, **33**
Hind helicopter: 604
Historic Military Buildings Committee: 529
Hitler: 110, **5**
Home Service Force: 302, 304, 331
Hong Kong: 327, 328
Hormuz, Strait of: **35**
Howe, Sir Geoffrey: **13**
Hunt class MCMV: **22**, Table 1, Table 6
Hurricane Emily: 338

I

Ikara anti-submarine weapon: Table 5
Illustrious, HMS: **33**
Improving Management in Government — The Next Steps: 510
Independent European Programme Group (IEPG): 116, 408-411
Inner German Border (IGB): **15**, **64**
Intercontinental ballistic missile (ICBM): 613-614, 617-618
Intermediate-range nuclear forces (INF): 102, **8**, 204, 523, 619-621
INF Treaty: 102, 107, **3**, 201-202, **9**, **13**, 221-222, 523, 601, 620, 624
Intrepid, HMS: 307, 310, **33**
IRA: 321
Iran: **35**
Iraq: **35**
Italy: **36**, 620

J

Jaguar aircraft: Table 5
Javelin missile-launcher: Table 2, Table 6
Jersey: 331
JP 233 cratering and area-denial weapon: 608

K

Kalashnikov assault rifle: **57**
Khrushchev: **5**
King's Bay, Georgia: **40**

L

Lance missiles: 302, 622
Landing Ships Logistic: 307, Table 1, Table 6
Lebanon: 330
Leopard II tank: **57**, 606
Light Anti-Tank Weapon for the 80s (LAW 80): 312, Table 2, Table 6
London Weather Centre: 530
Long-range stand-off missile (LRSOM): Table 5
Longer-range intermediate nuclear forces (LRINF): **8**, 619-620
Low-flying training: **30**
Luxembourg: 115, **36**
Lynx helicopter: **24**, Table 2, Table 5, Table 6

M

M 483 A1 artillery shell: Table 5
M-1 Abrams tank: **57**, 606
Magnetic anomaly detection system: 405
Mainstay aircraft: 605
Malaysia: 328
Martel missile: Table 5
Marxist-Leninist doctrine: **5**
Meko class frigate: 612
Merchant shipping: 319-320, **35**
Meteorological Office: 510-511, 530-532
Midge drone: Table 5
Milan missile: **24**, 607, Table 5
Mine countermeasures (MCM): **22**, 418
Mine Countermeasures vessels: 302, **22**, **35**, 405, 524, Table 1, Table 6
Minerva class escort vessel: 612
MINIS management information system: 509
Ministry of Defence Police (MDP): 533
Mirage aircraft: 608
MOD Contracts Bulletin: 406, 424, **44**
Modular Stand-Off Weapons: Table 5
Mountain Rescue Teams: 337
Multifunctional Information Distribution System: Table 5

Index

References in Roman type are to paragraph numbers.
References in bold type are to boxed passages and are by page number.

A

A 129 helicopter: Table 5
Ada Computer Language Project Support Environment: Table 5
Advanced Sea Mine: Table 5
Advanced Short-Range Air-to-Air Missile (ASRAAM): Table 5
Admiralty Research Establishment: 418
Aeroplane and Armament Experimental Establishment: 418
Afghanistan: 106
Airborne Radar Demonstrator System: Table 5
Air-launched anti-radar missile (ALARM): 317
Air Training Corps: 333
Air Transport Force: 302
Alkmaar class MCMV: 612
Allied Command Europe Mobile Force (Land): 302, 305, 307
Allied Tactical Air Forces: **17**, 302
AMX 30 B-2 tank: 606
Anglo-French Defence Equipment Conference: 415
Anti-Air Missile Systems, Family of: Table 5
Anti-Air Warfare System, NATO: Table 5
Anti-ballistic missile (ABM) system: 616
Anti-Ballistic Missile (ABM) Treaty: 205-207
Anti-submarine warfare (ASW): 306
Argus: 310
Ark Royal, HMS: **33**
ARMILLA Patrol, the: **35**, 524
Army Air Corps: **24**
Army Cadet Corps: 333
ASROC missile: 619
Australia: 306, 328, 421
Automatic data processing: 518
Auxiliary oiler replenishment vessels (AOR): 310, Table 1, Table 6
Aviation training ship: Table 1, Table 6

B

B-1B aircraft: 617
B-52 aircraft: 617
Backfire aircraft: 611
Ballistic missile nuclear submarine (SSBN): 617
Barra sonobuoys: Table 5
Basing Country Agreement: 203
Battlefield Artillery Target Engagement System (BATES): Table 6
Bear aircraft: 615
Belgium: **17**, 305, **36**, 620
Belize: 327
Berlin: **7**, 302
Bermuda: 338
Biological Weapons Convention: **13**
Blackjack aircraft: 615
Bloodhound missile: **23**
BM-27: **5**
BMP-2 infantry combat vehicle: 604
Boeing E-3 aircraft: **23**, 315, Table 3, Table 6
Boxer communications bearer system: 317, Table 3
Bradley armoured vehicle: 606
British Army Equipment Exhibition: 422
British Army of the Rhine (BAOR): 302, 312, 331, 505
Brunei: 327, 328
Brussels Declaration, the: 212
Brussels Treaty, the: **15**, **17**, 302
Buccaneer aircraft: 302, 306

C

Cadets: 333
Camp David: 208
Canada: **17**, 306, **30**, **64**
Canberra aircraft: 306
Central Army Group (CENTAG): **17**
Central Front: **15**, **17**, 305, **56**, **64**
Challenger armoured repair and recovery vehicle (ARRV): 312, Table 2, Table 6
Challenger tank: 312, Table 2, Table 6, **57**, 606
Channel fixed link: 117
Chatham dockyard: 529
Chemical Defence Establishment (CDE): 220, 418
Chemical warfare (CW): 107, **69**
Chemical weapons: 108, 111, **6**, 217-220, **14**, 221, 223, **69**
Chinook helicopter: **24**, Table 6
Churchill, Winston: **1**
Civil Industrial Access Scheme: 419
Clyde Submarine Base: **40**
Coastal survey vessel: Table 6
Coastguard, HM: 337
Combined Cadet Force: 333
Commonwealth countries: 120
Comprehensive test ban (CTB): 210, **14**
Conference of National Armaments Directors (CNAD): 408, 413
Conference on Disarmament (CD): 217-219, **14**
Conference on Security and Cooperation in Europe (CSCE): 211-213
Confidence- and security-building measures in Europe: 103, 211-212
Conventional Armaments Planning System (CAPS): 412
Cook Islands: 338
Counter Battery Radar (COBRA): Table 5
Countryside Commission, the: 528
Cruise missile:
  Air-launched cruise missile (ALCM): 205, 613, 615
  Ground-launched cruise missile (GLCM): **3**, **8**, 620
  Sea-launched cruise missile (SLCM): 205, 617
Cyclone Sally: 338
Cyclone Uma: 338
Cyprus: 327, 330
Czechoslovakia: 211, 603, **62**, **64**

D

Defence:
  budget: 119, 501-503
  estate: 525-529
  exports: 420-423
  policy: 118-122
  public relations: 523-524
  research: 416-419
  roles: 302
  statistics: **54**
Defence and the Environment: 527
Defence Engineering Service (DES): **45**, 520
Defence Export Services Organisation (DESO): 422-423, **45**
Defence Medical Services: 521-522
Defence Quality Assurance organisation: **45**
Defence Technology Enterprises Ltd (DTE): 419
Delta class submarine: 614
Denmark: **16**

Stockholm Conference 1986: 103, 211
Stockholm Document, the: 211-212, **13**, 305, **33**
Strategic Arms Limitation Treaty II (SALT II): **13**, 613
Strategic Defence Initiative (SDI): **9**, 207-208, 406, 424-426
Strategic Defence Initiative Participation Office (SDIPO): 424, 426
Strategic forces: 613-618
Submarine-launched ballistic missiles (SLBMs): 613-614, 617-618
SUBROC missile: 619
Summit:
  Anglo-French: 117
  NATO Heads of State and Government: 101-102, **2**, 109-111, **3**, 201, 212, 215, 221
  Washington: 102, 204
Supreme Allied Commander Europe (SACEUR): **3**, **64**, 622
ırface-to-air missile (SAM) systems: 604, 619
Surface-to-surface ballistic missiles, short-range (SRBMs): 604
Swiss Air Force: 421

T

T-55 tank: **57**
T-62 tank: **57**
T-64A tank: **57**
T-64B tank: **57**
T-72 tank: **57**, **62**
T-80 tank: **57**, 604, **62**
Terrier missile: 619
Territorial Army (TA): 302, 304-305, 331
Thailand: 328
Thermal imagers: Table 2, Table 6
Third Generation Anti-Tank Guided Weapon (TRIGAT): 414, Table 5
Threshold Test Ban Treaty: 209
Tooele: 220
TOPMAST management information system: 407
TOPMIS management information system: 509
Tornado aircraft: 302, **23**, 316, Table 3, 318, **30**, 328, 414, 420, Table 5, Table 6, 608, 612
TOW missile: **24**, 607
Trafalgar class submarine: 309
Trenchant, HMS: 309
Trident strategic deterrent: 118, 222, 302, 308, Table 1, 404, **40**, Table 6, 617
Tristar aircraft: 306, 328, Table 6
Tucano aircraft: 316, 405, Table 6
Type 22 frigate: 309, Table 1, 505, Table 6, 612
Type 23 frigate: 309, Table 1, 405, 505, Table 6
Type 2400 diesel-electric submarine: Table 6
Typhoon class submarine: 614

U

UK Air Defence Ground Environment: **23**
Ulster Defence Regiment (UDR): 322, 324
United Kingdom: **3**, 115, 203, **9**, 204, 208, 210-211, 213, 217-219, **14**, 223, **15**, 302, 304, 306, **30**, 328, **33**, 338, **35**, 410, 415, 425, 506, 508, **62**, **64**, 620, **69**
United Kingdom Air Defence Region (UKADR): 304, **23**
United Kingdom Mobile Force (UKMF): 302, 307
United Kingdom/Netherlands Amphibious Force: 302, 305
United Nations: 330
United States: 102, 109, 112, 202-204, **8**, 206-207, 209, 221, **15**, **17**, 302, 305, **30**, **36**, **40**, 421, 426, Chapter 6
Upholder class submarine: 309, **46**, Table 6
Upholder, HMS: 309

V

VAB armoured vehicle: 606
Vanguard, HMS: **40**
VC-10 aircraft: 306, 318, Table 6
Verification: 203, **9**, **13**
Victorious, HMS: **40**
Vienna: 216

W

Warrior mechanised infantry combat vehicle: 312, Table 2, Table 6, **46**, 606
Warsaw Pact: 109, **5**, 211-216, **14**, 223, **15**, **24**, **56**, Chapter 6
Wavell ADP system: Table 6
Wessex helicopter: 337
Western European Union: 114-115, **36**
Women's Royal Voluntary Service: 516

801344/4200/5/88 Designed by Multiplex medway ltd Printed by CS(Rep S)LP Eastcote

Multiple-Launch Rocket System (MLRS): 312, Table 5, **58**, 606
Mutual and Balanced Force Reductions (MBFR) talks: 216, **56**
MX missile: 617

N

National Employer Liaison Committee: 332
National Health Service: 522
NATO Frigate Replacement (NFR 90): 414, Table 5
NATO Identification System: 413, Table 5
Nature Conservancy Council: 528
Netherlands, the: **17**, **36**
Nevada: 209, 305
New York: **15**
New Zealand: 306, 328
Nimrod aircraft: 302, 306, 328, 337
North Atlantic Council: **15**
North Atlantic Treaty: **15**
North Atlantic Treaty Organisation (NATO): 101, 107, 109-110, 113, **3**, 115, 117, 119-120, **5**, 204, 211-213, 216, **13**, 221, 223-224, **15**, 302, **23**, 502, **56**, Chapter 6
Northern Army Group (NORTHAG): **16**, 302, 305, **24**
Northern Ireland: 321-325, 335
Northern Region: **16**
Norway: **15**
Nuclear Planning Group (NPG): **3**
Nuclear-powered Fleet submarine (SSN): Table 6
Nunn Amendment: 413, Table 5

O

Oerlikon gun: **23**, 316
Ohio class submarine: 617

P

Paris Agreements: **15**
Patriot surface-to-air missile: 608
Patrol craft: Table 6
Peaceful Nuclear Explosions Treaty: 209
Pershing I A missile: **9**, 620
Pershing II missile: **3**, **8**, 620
Phantom aircraft: **23**, 306, 328, Table 6
Phoenix remotely-piloted vehicle: 312, Table 6
Platform on European Security Interests: 115, **4**
Poland: 603, **62**
Polaris strategic deterrent: 222, 302, **40**
Portland: 306
Portsmouth Naval Base: 529
Prime Minister, the: 105, 208, 523
Procurement Executive (PE): 406-407, **44**
Procurement Executive Management Board: 509, **45**
Property Services Agency: 527
Ptarmigan digital communications: Table 6
Public Expenditure White Paper: 501, 503
Public relations: 523-524
Puma helicopter: **24**, 318, Table 5

Q

Qatar: **36**
Queen's Gurkha Engineers: 338

R

RAF Brize Norton: 105, 523
RAF Germany: **17**, 302, 316
RAF Greenham Common: 203, **9**, 523
RAF Molesworth: 203, **9**, 523
RAF Rescue Coordination Centres: 337
RAF Strike Command: **23**
Rapier missile: **23**, 312, Table 6
Rapier 2000 missile: 312, Table 6
Reagan, President: 102, **9**, 208-209
Reykjavik: 201, **9**, 208, 221, 224
Royal Air Force Volunteer Reserve: 331
Royal Aircraft Establishment (RAE): 418
Royal Armament Research and Development Establishment: 418
Royal Army Ordnance Corps: 325
Royal Artillery: 313
Royal Auxiliary Air Force: 331
Royal Auxiliary Air Force Regiment: 302, **23**, 316
Royal Dockyards: 504
Royal Engineers: 316, 338
Royal Fleet Auxiliary: 306
Royal Marines Reserve: 331
Royal Naval Armament Depot (RNAD) Coulport: **40**
Royal Naval Reserve: 302, **22**, 331
Royal Navy Equipment Exhibition: 422
Royal Ordnance plc: 504
Royal Signals and Radar Establishment (RSRE): 418
Royal Ulster Constabulary: 321-322
RTM 322 helicopter engine: Table 5

S

S 10 respirator: 312, Table 2, Table 6, 405
SA 80 infantry weapons: 312, Table 2, Table 6
Sandown class MCMV: **22**, Table 1, Table 6
Saudi Arabia: 420
Sauro class submarine: 612
Saxon armoured personnel carrier: 312, Table 2, Table 6
Scaleboard (SS-22) missile: 620
Scorpion reconnaissance vehicle: Table 5
Scotland: **30**, **33**, **40**
Scud missile: 622
Sea Cadet Corps: 333
Sea Gnat decoy system: Table 5
Sea Harrier aircraft: 302, 328, Table 6
Sea King helicopter: 337, Table 1, Table 6
Sea Scouts: 333
Seabed Operations Vessel: Table 6
Search and rescue (SAR): 336-337
Seawolf missile, lightweight: Table 1
Second World War: **5**, **15**
Self-propelled artillery: **6**, **57**, 604
Selling to the MOD: 406
Semipalatinsk: 209
Shevardnadze, E: 218, **13**
Shikhany: 220
Ships Low-Cost Inertial Navigation System: Table 5
Shorter-range intermediate nuclear forces (SRINF): **9**, 619-621
Short-range anti-radiation missile (SRARM): Table 5
Short-range nuclear forces: 622
Sidewinder missile: **23**, Table 5, 608
Sinai: 330
Singapore: 328
Sir Galahad: 309
Skyflash missile: **23**
Skyguard radar: **23**, 316
Skyron: 337
Small Firms Initiative: 406, **44**
Sonar 2074: Table 1, 405
Southern Region: **16**
Sovereign Base Areas (SBAs): 327, 330
Soviet defence expenditure: 623-624
Soviet military doctrine: **5**, **58**
Soviet Union: 102, 104-108, 110, **3**, **5**, 202-204, **8**, 206-207, 209, 211, 214, 218, 220-221, 223, **15**, **56**, Chapter 6
Spain: 602
SS-4 missile: 620
SS-20 missile: **8**, 620
SS-21 missile: 604, 622
SS-23 missile: 620
SS-25 missile: **13**, 614
SS-N-3 missile: 619
SS-N-5 missile: 619
SS-N-7 missile: 619
SS-N-12 missile: 619
SS-N-19 missile: 619
SS-N-20 missile: 614
SS-N-21 missile: 615
SS-N-23 missile: 614
SS-NX-24 missile: 615
SS-X-24 missile: 614
Staff Responsibility Budgets (SRBs): 508-509
Stalin: **5**
Standing and On-Call Naval Forces (NATO): 306
Starstreak high velocity missile: 312, 505, Table 6

HMSO publications are available from:

HMSO Publications Centre

(Mail and telephone orders only)
PO Box 276, London SW8 5DT
Telephone orders 01 622 3316
General enquiries 01 211 5656

HMSO Bookshops

49 High Holborn, London, WC1V 6HB 01 211 5656 (Counter service only)
258 Broad Street, Birmingham, B1 2HE 021 643 3757
Southey House, 33 Wine Street, Bristol, BS1 2BQ (0272) 24306/24307
9-21 Princess Street, Manchester, M60 8AS 061 834 7201
80 Chichester Street, Belfast, BT1 4JY (0232) 238451
13a Castle Street, Edinburgh, EH2 3AR 031 225 6333

HMSO's Accredited Agents
(see Yellow Pages)

And through good booksellers

ISBN 0 10 103442 3

30

Statement on the Defence Estimates 1987

1

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1987

LONDON
HER MAJESTY'S STATIONERY OFFICE

£5.00 net

Cm 101-I

Statement on the Defence Estimates 1987

1

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1987

LONDON
HER MAJESTY'S STATIONERY OFFICE
£5.00 net

Cm 101-I

ISBN 0 10 101012 5

Contents

The use of italics below denotes material designed either to offer additional factual background or to indicate the Government's thinking on important general issues as a stimulus to debate. These passages are distinguished from the main text by their distinctive setting and typeface.

	Page
Glossary	
Chapter One: Maintaining Security	**1**
NATO — The Dual Approach	1
The Challenge for NATO	1
NATO's Military Strategy	2
British Defence Policy	2
70 Years On: A Country or a Cause?	4
Chapter Two: Arms Control	**7**
Nuclear Arms Control	7
US-Soviet Negotiations	7
Camp David Meeting	8
The Prime Minister's Visit to Moscow	8
The British and French Deterrents	9
Nuclear Testing	9
SDI	10
Chemical Weapons and Arms Control	10
Conventional Arms Control	12
Confidence-Building Measures	12
Nuclear Weapons and NATO Strategy	13
Chapter Three: British Defence Policy	**15**
The Atlantic Alliance	15
The European Pillar	15
The Western European Union	16
Nato Defence Planning	16
Conventional Force Planning	16
Conventional Defence Improvements	17
Nuclear Planning	17
The American Pillar	18
Outside the NATO Area	22
Chapter Four: The Armed Forces	**25**
The Royal Navy	25
Merchant Shipping	27
The Army	29
The Royal Engineers	31
The Royal Air Force	31
Maps and Charts	33
Exercises	34
GLOBAL 86	36
The Services and the Community	37
Bomb Disposal	37
Search and Rescue	37
Service Training and the British Economy	37
Disaster Relief	37
Trident: Costs and Benefits	38
The Minimum Deterrent	39
Chapter Five: Equipping the Armed Forces	**43**
Procurement Policy	43
Successes in Procurement	44
New Measures	44
Small Firms Initiative	45
Organisation, Staffing and Information	45
Quality Assurance	45
Airborne Early Warning	45
Equipment Collaboration	46
More Capable and Reliable Equipment	47
Defence Research	48
The Defence Research and Development Base	48
Defence Exports	49
British Participation in the SDI Research Programme	49
Royal Ordnance plc	50
UK-based Contractors paid £5 million or more by MOD in 1985-86	51

Chapter Six: Managing Defence Resources 52
The Defence Budget 52
Value for Money 54
Transferring Resources from Tail to Teeth 54
Financial Management 55
Personnel 55
The Services 55
Civilians 57
Defence Engineering Service 57
Security 58
The Ministry of Defence Police 58
Royal Dockyards 58
Defence Medical Services 59
AIDS and the Armed Forces 59
Higher Defence Studies 59
The Defence Estate 59
Energy Efficiency 60
The Meteorological Office 60
Public Relations 60

Annex A: The Forces of East and West 61
Conventional Forces 61
Calculating the Conventional Balance 61
Land and Air Forces 62
Maritime Forces 63
Nuclear Forces 66
Calculating the Nuclear Balance 66
Strategic Forces 66
Intermediate and Short-Range Nuclear Forces 69
The Soviet Space Programme 69
Soviet Defence Expenditure 69

Annex B: The Strength of the Fleet 70
Ships of the Royal Navy 70
Ships of the Royal Fleet Auxiliary 72
Royal Marines Commando Forces 72
Naval Aircraft 73

Annex C: The Strength of the Army 74

Annex D: The Strength of the Royal Air Force 76

Diagrams

Figure 1 Ranges of Intermediate-Range Nuclear Systems in Europe 8
Figure 2 A Guide to Nuclear Weapons 9
Figure 3 Arms Control Fora 11
Figure 4 Deployment of the Armed Forces, early 1987 20
Figure 5 Exercises outside Europe in 1986 34
Figure 6 GLOBAL 86 36
Figure 7 Divisions of Procurement Expenditure 43
Figure 8 The Defence Budget by Principal Headings 1987-88 52
Figure 9 An Analysis of Defence Resources (1987-88) by Major Programmes 53
Figure 10 Cost of Main Commitments 54
Figure 11 A Comparison of Defence Expenditure: NATO Countries 1986 56
Figure 12 The Current Balance of Forces on the Central Front 62
Figure 13 The Current Disposition of Forces from the Atlantic to the Urals 64
Figure 14 NATO and Warsaw Pact Principal Naval Forces 65
Figure 15 The Balance of Strategic and LRINF Systems — end 1986 67
Figure 16 The Balance of Shorter-Range Systems with Nuclear or Nuclear-capable Variants 68

Photographs

Soviet T-72 tank driving through Red Square 4
HMS *Brazen* entering Grand Harbour, Valetta 27
The Warrior Mechanised Infantry Combat Vehicle 29
A Phantom intercepts a Soviet Bear bomber in the United Kingdom Air Defence Region 32
A Polaris submarine returns from patrol 40
British, German and Italian pilots and navigators train together at RAF Cottesmore on the collaboratively-produced Tornado aircraft 46

Tables

Table 1 Major Equipment ordered since 1979 26
Table 2 Royal Navy Equipment 28
Table 3 Army Equipment 30
Table 4 Royal Air Force Equipment 33
Table 5 Major Exercises in 1986 35
Table 6 Estimated Programme Costs of Major Equipments entering Full Development in 1986-87 46
Table 7 Illustrative Unit Costs of Defence Equipment 46
Table 8 Collaborative Projects involving the United Kingdom 47

Glossary

ABM	Anti-Ballistic Missile
ADE	Armoured Division Equivalent
ADP	Automatic Data Processing
ADV	Air Defence Variant
AEW	Airborne Early Warning
ALCM	Air-Launched Cruise Missile
AOR	Auxiliary Oiler Replenishment Vessel
ARRV	Armoured Repair and Recovery Vehicle
ASROC	Anti-Submarine Rocket
ASW	Anti-Submarine Warfare
ATF	Air Transport Force
AWACS	Airborne Warning and Control System
BAOR	British Army of the Rhine
BATES	Battlefield Artillery Target Engagement System
CD	Conference on Disarmament
CDE	Conference on Disarmament in Europe
CDI	Conventional Defence Improvements
CNAD	Conference of National Armament Directors
CSCE	Conference on Security and Cooperation in Europe
CTB	Comprehensive Test Ban
C^3	Command, Control and Communications
CW	Chemical Warfare
DES	Defence Engineering Service
DESO	Defence Export Services Organisation
DPC	Defence Planning Committee
DROPS	Demountable Rack Off-Load and Pick-Up System
DTE	Defence Technology Enterprises Ltd
ECM	Electronic Countermeasures
EH101	European Helicopter 101
EOD	Explosive Ordnance Disposal
ERB	Executive Responsibility Budget
FPDA	Five Power Defence Agreement
FPMG	Financial Planning and Management Group
GLCM	Ground-Launched Cruise Missile
ICBM	Intercontinental Ballistic Missile
IEPG	Independent European Programme Group
INF	Intermediate Nuclear Forces
JFHQ	Joint Force Headquarters
LAW 80	Light Anti-Tank Weapon for the '80s
LRINF	Longer-Range Intermediate Nuclear Forces
MBFR	Mutual and Balanced Force Reductions
MCM	Mine Countermeasures
MCMV	Mine Countermeasures Vessel
MDE	Manpower Division Equivalent
MDP	Ministry of Defence Police
MICV	Mechanised Infantry Combat Vehicle
MINIS	Management Information System for Ministers
MIRV	Multiple Independently-Targetable Re-entry Vehicle
MLRS	Multiple-Launch Rocket System
MP	Maritime Patrol
MRT	Mountain Rescue Team
NATO	North Atlantic Treaty Organisation
NORTHAG	Northern Army Group
NPG	Nuclear Planning Group
NST	Nuclear and Space Talks
PE	Procurement Executive
R & D	Research and Development
RFA	Royal Fleet Auxiliary
RMAS	Royal Military Academy, Sandhurst
RNAD	Royal Naval Armament Depot
RUC	Royal Ulster Constabulary
SACEUR	Supreme Allied Commander Europe

SA 80	Small Arms for the '80s
SALT	Strategic Arms Limitation Talks
SAM	Surface-to-Air Missile
SBA	Sovereign Base Area
SDI	Strategic Defence Initiative
SDIPO	Strategic Defence Initiative Participation Office
SLBM	Submarine-Launched Ballistic Missile
SLCM	Sea-Launched Cruise Missile
SRB	Staff Responsibility Budget
SRBM	Short-Range Surface-to-Surface Ballistic Missile
SRINF	Shorter-Range Intermediate Nuclear Forces
SRMH	Single-Role Mine Hunter
SSBN	Ballistic Missile Nuclear Submarine
STOVL	Short Take-Off Vertical Landing
STUFT	Ships Taken Up From Trade
SUBROC	Submarine Rocket
TA	Territorial Army
TOW	Tube-Launched Optically-Tracked Wire-Guided Missile
2 ATAF	Second Allied Tactical Air Force
UDR	Ulster Defence Regiment
UKMF	United Kingdom Mobile Force
WEU	Western European Union
WP	Warsaw Pact

Maintaining Security

NATO — THE DUAL APPROACH

101. 1986 was an eventful year in the field of international security. September saw the signature of the first major arms control agreement since 1979: on Confidence- and Security-Building Measures in Europe. In October, the radical proposals discussed at the meeting in Reykjavik between President Reagan and Mr Gorbachev gave a new stimulus to the debate that was already taking place about the best means of providing for Western security in the years ahead, and, in particular, focused renewed attention on the role of nuclear weapons in NATO strategy.

102. These were among the issues faced by the Prime Minister and President Reagan when they met in November at Camp David to discuss the way forward on arms control after Reykjavik: a meeting that successfully established the basis of an Alliance strategy for pursuing the opportunities for progress. The two leaders agreed that priority should be given to an agreement on intermediate nuclear forces, with restraints on shorter-range systems; a reduction of 50% over five years in US and Soviet strategic offensive weapons; and a ban on chemical weapons. In all three cases, effective verification would be an essential element. The main features of this approach were endorsed both by Eurogroup Ministers and by NATO Ministers collectively in December. Further details are given in Chapter 2.

103. Whether there is now an opportunity to secure major reductions in nuclear armouries remains to be seen. But in seeking to exploit any opportunity we must keep our eyes fixed firmly on the fundamental objective set out in the preamble to the North Atlantic Treaty and reproduced below. For taking steps that may at first sight seem desirable in themselves will be to no avail if their result is to jeopardise the peace and freedom that we have now enjoyed for over 40 years.

> 'The Parties to this Treaty ..... are determined to safeguard the freedom, common heritage and civilisation of their peoples, founded on the principles of democracy, individual liberty and the rule of law.'
>
> *Preamble to The North Atlantic Treaty, Washington D.C., 5 April, 1949*

104. Maintaining security is ultimately a political and diplomatic as much as a military problem. That is why NATO has always taken a dual approach, seeking political dialogue and greater understanding alongside deterrence and defence. For real security cannot exist where distrust and suspicion reign. Our ultimate aim must be a relationship with the East that is not merely proof against all possible threats, but free of such threats. The British Government has therefore welcomed the steps taken by President Reagan and Mr Gorbachev to build a relationship of greater understanding between East and West. But we recognise that this search will be a gradual process; for the Soviet Union and Western countries start from such different standpoints.

THE CHALLENGE FOR NATO

105. As we argue on page 4 , it has always been an illusion to believe that the Soviet Union is basically motivated by the same aims as Western nations: Soviet history and, above all, Marxist-Leninist ideology have over the years caused Soviet leaders to adopt a very different approach to international relations from that taken in the West. Mr Gorbachev's 'new thinking' is a welcome development; but it is not yet clear how far it will be reflected in Soviet behaviour in the foreign policy field.

106. There is nothing to suggest that Soviet leaders have any desire for war in Europe. Indeed, rather the reverse; for the risk of military failure remains too high. But although they may have no wish to promote war, they do seek by other means constantly to weaken NATO and to expand Soviet influence in our continent, taking full advantage of the freedoms enjoyed by Western societies to achieve their aims. And their activities in this field are backed by an enormous, and constantly expanding, military might, which they have frequently been ready to use in support of political ends, both directly and indirectly, as events in East Germany, Hungary, Czechoslovakia, Poland and Afghanistan have demonstrated.

107. This expanding Soviet military might has been financed by defence expenditure that increased by about 50% in real terms between 1970 and 1985 — substantially more than the increase in NATO expenditure over the same period. During that time, while a broad parity has been maintained in US and Soviet strategic nuclear capabilities, the Soviet Union has increased and enhanced its theatre nuclear systems in Europe. The 1970s saw the introduction of a range of improved Soviet ballistic missiles: the SS-21 in 1975; the modified Scaleboard (SS-22) and the extremely capable SS-20 in 1977; and the SS-23, tested in 1979 and deployed in 1985. This capability, which directly threatens Western Europe, was unmatched by NATO until the deployment of Western ground-launched cruise missiles and Pershing II in 1983. Even now, as Annex A demonstrates, the Soviet Union has a 3 : 1 superiority in warheads on longer-range intermediate nuclear missiles, a 9 : 1 advantage in shorter-range missile launchers and

an 8 : 1 advantage in short-range missile launchers.

108. The build-up of Soviet and other Warsaw Pact conventional forces over the last ten to fifteen years has been no less marked. During that period the Soviet Navy has acquired an ocean-going fleet, which includes three Kiev class aircraft carriers, some 36 cruisers, 60 or so destroyers and about 200 nuclear-powered submarines; of the latter, over 60 carry nuclear ballistic missiles, as well as having a developing land-attack capability from submarine-launched cruise missiles. Warsaw Pact land forces west of the Urals have expanded from 165 divisions in the early 1970s to nearly 190 divisions now. During the same period, the Pact deployed some 10,000 additional tanks and some 15,000 additional and larger-calibre artillery pieces with enhanced capabilities, while NATO's numbers in these categories increased only slightly. The Warsaw Pact has continued to update its air forces with the introduction of new fighter, bomber and support aircraft.

109. The result, as Annex A shows, is that in Europe the Soviet Union and its allies enjoy considerable advantages over NATO in conventional forces. They have the potential to bring to bear substantial numbers of fighting men in a relatively short period. Perhaps more significantly, they enjoy considerable numerical superiority over NATO in several key categories of weapon system. For example, on the Central Front they have twice as many aircraft and tanks and three times as many artillery pieces. They enjoy similar superiorities in other key categories of equipment, such as infantry fighting vehicles and helicopters. In combination, and taken together with the forward deployment of the forces concerned, these represent significant advantages for the Warsaw Pact.

110. Against this background, it is vital that, whatever we may assess current Soviet intentions to be, the West should not lower its guard. For, given the association of an expansionist history and a hostile ideology with an immense military power, we cannot presume — notwithstanding the encouraging developments that are taking place in Moscow under Mr Gorbachev's leadership — that the Soviet Union will never again resort to force, whether in Europe or elsewhere.

'If there is an elephant in your neighbour's garden, there is much to be said for studying its intentions. But, however friendly you may think it to be, there is equally much to be said for having a stout fence to protect your flower beds.'

Lord Carrington,
Secretary General, NATO,
Oslo University,
April, 1985

NATO'S MILITARY STRATEGY

111. NATO's aim is both to deter the direct use of force, and to prevent other, indirect, uses of Soviet military power, such as the application of unacceptable political pressures on the political and economic life of our free Western states. We meet the military challenge by seeking to convince the Warsaw Pact that, if it did resort to force, it would not succeed easily or quickly in achieving its military objectives. Hence NATO's need for the full spectrum of modern conventional weaponry to check and, if possible, repulse an attack.

112. But history, too often repeated, has shown that this traditional kind of defence cannot always be relied on to deter an attacker, even when the defender has a superiority in conventional forces — a position that is certainly not true of Western Europe. The aggressor might miscalculate the likely response. Or he might calculate that he could fight from start to finish on the territory of others: in such circumstances, even if he lost, the destruction and suffering would be largely visited on his military forces, while his homeland remained a sanctuary. And his political and economic reasons for initiating aggression might be quite strong enough for him to take that risk. That is why a wholly 'defensive defence' posture, such as some have recommended for NATO, would not be sufficient to provide full security for the West.

113. It is also the reason — quite apart from the Soviet Union's own massive nuclear armoury — why NATO must retain nuclear weapons. In order effectively to deter a potential aggressor, it is important for him to calculate that he would run real risk of suffering unacceptable damage to his own territory and to his own people if he were to attack. Only nuclear weapons can threaten him with that risk. The nuclear contribution to our defence is therefore essential to effective deterrence. For the risks of nuclear war will always be such that it would never be a rational act to provoke it. A fuller discussion of the place of nuclear weapons in NATO strategy is included on page 13.

'Be careful above all things not to let go of the atomic weapon until you are sure, and more than sure, that other means of preserving peace are in your hands.'

Sir Winston Churchill,
Address to a Joint
Session of the US
Congress,
January, 1952

114. NATO's policy of deterrence has served our purpose well for nearly 40 years. We cannot prove that it has been the sole factor preventing major war, or the spread of Soviet influence, in Europe during that time. But nor can its opponents prove that the alternatives they propose would be as certain of maintaining peace, while at the same time preserving those aspects of our society that we most value. It would be the height of folly now to abandon a strategy that has been tried and tested, for alternatives that provide no sure guarantee of giving us equal security.

BRITISH DEFENCE POLICY

115. Britain plays a major role in the NATO Alliance. As we describe in Chapter 3, we are the only European member to contribute to all three elements of NATO's triad of forces. The substantial contribution made by the three Services to each of our four NATO roles is considered in Chapter 4; while on page 22 we look at our activities outside the NATO area. The resources that Britain allocates to defence — £18,782 million in 1987-88 — put us near the top of the NATO league, whether measured in absolute terms, as a percentage of gross domestic product or *per capita*. We continue to plan substantial investment in each of our main defence roles. And, as we describe in Chapters 5 and 6, we are

55

energetically pursuing improvements in efficiency, so as to achieve better value for the money that we spend on defence.

116. At the same time, and in line with NATO's dual approach, we are working to reduce East-West tension and the risk of conflict. Britain is playing a very active role in this field. The Lord President of the Council led a parliamentary delegation to Moscow early in 1986; and the Soviet Foreign Minister came to London last July. Most significantly, in the spring of this year the Prime Minister and Foreign Secretary paid an important visit to Moscow — the first official Prime Ministerial visit since 1975. This was a constructive and valuable visit, during which the Prime Minister and Mr Gorbachev were able to discuss their differences frankly and establish a firmer basis for cooperation both between the United Kingdom and the Soviet Union and between East and West.

117. Our hope and aim is that both East and West should pursue with energy and vision the new possibilities for arms control that have recently opened up, and that we should make progress towards a world of greater security and cooperation. We do not expect dramatic results overnight. But, thanks in no small part to the cohesion and determination that NATO has shown in its dealings with the Warsaw Pact, the prospects look better now than they have done for many years.

118. We must ensure that nothing is done to damage those prospects; and that we do not, through impatience, either negotiate — or unilaterally deliver — ourselves into a less secure world. Now is a time for steady nerves; realism in assessing the opportunities for progress; and readiness to grasp them where they exist. By such means we are working to provide a better future for ourselves and our children, and to ensure that the benefits of peace, prosperity and freedom with security may be shared by all.

70 Years On: A Country or a Cause?

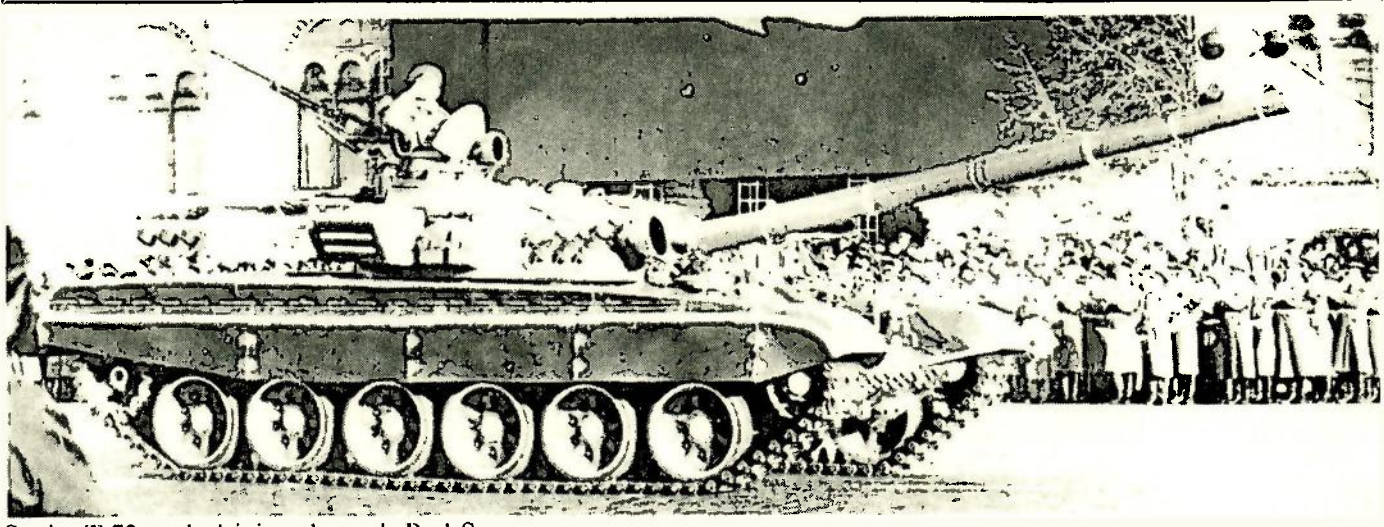
1. 1987 marks the 70th anniversary of the Bolshevik revolution, which brought the Soviet Union into being. So it is timely to ask: what is the Soviet Union today? Is it a country with values and concerns much as our own — to live in freedom and prosperity and in harmony with its neighbours? The friendly face that Soviet leaders under Mr Gorbachev present to the world has encouraged some to take that view. Or is it an implacable opponent, bent only on increasing its influence at the expense of Western interests and values? Which of these two pictures is nearer to the truth?

2. It is important that we try to understand what Soviet aims and intentions are because they must in some degree determine our own policies. The massive military potential that successive Soviet leaders have developed and have chosen to deploy facing, or to target on, Western Europe is indisputable. But we have to ask ourselves whether these capabilities are merely insurance against attack, or whether they might also have aggressive purposes. For if harmonious co-existence were the real long-term Soviet aim, and if Soviet military strength were — and would remain — merely an insurance, then the West might conceivably reduce its armaments with no fear of the consequences. If, on the other hand, expansion or the extension of Soviet influence were even a partial Soviet motive there would be a very strong argument for exercising caution in our dealings with the Soviet Union.

3. Russia has always been a difficult country for the West to understand. 'Secrecy presides over everything' was a Western view of Russia 150 years ago, and in this respect little has changed since then. The new Soviet leadership, with its policy of *glasnost'* (openness), has begun to lift the veil; but there is still a very long way to go. The secrecy has spawned a small industry in the West analysing Soviet ideology, actions, motives and intentions, with predictable scope for disagreement about the results. There is nonetheless much common ground, and this includes the importance of Russian history and of Marxist-Leninist ideology in shaping Soviet thinking and policies.

4. The Russian view of the world has always emphasised that security can only be achieved from a position of military strength. Until the 18th century Russia had no clearly defined natural frontiers to east or west; in the west this is still largely the case. Russian rulers back to the 15th century and earlier were therefore obsessed by their vulnerability to invasion and encirclement. Their way of meeting the danger was both to build up large forces to impress and frighten off potential enemies; and periodically to extend their territory. This can be seen in the sevenfold expansion of the Russian Empire between the 16th and 19th centuries, when it reached something like the size and shape of the Soviet Union today. In more recent times, Western intervention during the Russian civil war and, later, the Nazi invasion of the Soviet Union, with its appalling toll of 20 million Soviet dead, reinforced the obsession.

5. But in 1917 a new element was superimposed on the traditional Russian obsession with security: Marxist-Leninist ideology. From his seat in the British Museum, Marx had earlier posited that under 'capitalism', social relations were based on an antagonistic relationship between those who owned the means of production and those whose only possession was their ability to work. Conflict between the two was inevitable. Capitalism, however, contained the seeds of its own downfall: Marx took the view that the working class would eventually overthrow the capitalist class and establish a classless society based on production for use rather than for profit. Marx expected such revolutions to occur first in the industrialised



Soviet T-72 tank driving through Red Square

SG

countries of Western Europe.

6. Lenin, the practical revolutionary, added two important elements to this theory. The first was the concept of an elite band of revolutionaries — the Party — who would lead the masses to a new society. He thus provided an instrument to speed the destruction of the existing order in Russia without having to wait for history to take its course. His second contribution was to take Marx's concept of the 'exploiting' and 'exploited' classes and extend it to the relationship between nations. Lenin proposed 'imperialism' as the last stage of capitalism and argued that this 'exploitation' would eventually lead colonial peoples to drive out the imperialists.

7. With the success of the Bolshevik revolution Lenin thus established in power a Party whose view was of a world divided into two implacably opposed systems, each struggling to shift the global balance of power in its own favour; a Party which held it as a scientific truth that communism would triumph in the end; and which saw its duty as giving history a helping hand wherever possible.

8. In the early days of the Second World War the Soviet Union provided a graphic demonstration of this by taking over the three independent Baltic states, Latvia, Lithuania and Estonia — formerly part of the Tsarist Empire — by agreement with Hitler under the terms of the Nazi-Soviet Pact. At the same time, eastern Poland and parts of Romania, Czechoslovakia and Finland were annexed. After the war this expansion continued, with the establishment of Soviet control over the East European countries of East Germany, Poland, Hungary, Czechoslovakia, Romania and Bulgaria. The Soviet claim that the communist regimes in these states are the product of popular national and inevitable revolution is false, since most of them were installed by means of rigged elections or manipulation, facilitated by the presence of Soviet troops; and attempts to change the situation have usually been crushed by force of arms, as in East Germany in 1953, Hungary in 1956, Czechoslovakia in 1968 and, indirectly, Poland in 1981.

9. In large part the establishment of communist regimes in these countries served as a buffer both against political 'contamination' from the West — for the existence of Western democracies in Europe is a constant reproach to the Soviet totalitarian system — and against the risk that any future conventional war might be fought on Soviet territory. Some have argued that this somehow justifies the Soviet hold over Eastern Europe. Some go on to suggest that the Soviet Union has no intention of extending its reach any further westwards into Europe. On the first point, most people would profoundly disagree that national insecurity is a fair excuse for the curtailment of others' national and individual freedoms. The second point is the nub of this essay.

10. Faced with such an assertion, we are bound to ask: can you be absolutely certain? For although we have no reason to believe that the Soviet Union would run the risk — as long as NATO remains strong and united — of a direct military incursion into Western Europe, it is difficult to ignore the evidence of past Russian and Soviet history, which has been living proof of the idea that the best form of defence is expansion. And even if Soviet leaders are not actively seeking further territorial expansion, the events of recent years suggest that they are always ready to extend Soviet political influence wherever possible, often using military means to that end.

11. Nor should we forget the basic tenets of Marxist-Leninist ideology. In 1916, for example, Lenin wrote:

> 'Socialists cannot, without ceasing to be socialists, be opposed to all war ... Only after we have overthrown, finally defeated and expropriated the bourgeoisie of the entire world ... will wars become impossible.'

Although — as the development of nuclear weapons made the very prospect of conflict between East and West horrendous — Soviet leaders ceased to regard a final war between communism and capitalism as inevitable, the Marxist-Leninist view of the continuing and inevitable struggle between the two systems remained unchanged. The liberal democratic idea of harmony between states is foreign to traditional Soviet thought: for Soviet leaders, peaceful co-existence has been seen not as a permanent condition but as a period of transition, on the way to the ultimate triumph of communism.

12. Even Mr Gorbachev has testified his adherence to the tenets of Marxism-Leninism. Consider, for example, this extract from his report to the 27th Soviet Party Congress in February, 1986:

> 'World developments confirm the fundamental Marxist-Leninist conclusion that the history of society is ..... a law-governed onward process. Not only do its contradictions pass sentence on the old world, on everything that impedes advance; they are also the source, the driving force behind the social progress that is taking place in conditions of a struggle that is inevitable so long as exploitation and exploiting classes still exist.'

13. On the other hand, at the Party Congress and elsewhere, Mr Gorbachev has spoken of 'a growing tendency towards interdependence of the countries of the world community' and of the need for 'new thinking' in the nuclear and space age. He has argued that the task of ensuring security can only be resolved by political, not military, means; that security between states can only be mutual; and that in the present situation 'confrontation between capitalism and socialism can proceed only and exclusively in the forms of peaceful competition and peaceful rivalry'. This is

a welcome evolution of Soviet political thinking; but it is not yet clear how much weight it will be given, as opposed to traditional Marxism-Leninism, which in some ways it contradicts.

14. Recent moves towards a more open and humane Soviet Union are also welcome. But we should not forget that Mr Gorbachev's talk of 'democratisation' does not mean democracy in the Western sense; no weakening of the Communist Party's control over all areas of Soviet life is intended. And although Mr Gorbachev has made encouraging steps towards freeing the Soviet Union from the ideological shackles of a theory of permanent confrontation between capitalist and communist systems, the weight of ideolog still bears heavily both on Soviet theory and oviet practice. Moreover, the institutions of So society have stayed unaltered. It remains to be seen, therefore, whether the 'new thinking' will be accompanied by changes in the objectives of Soviet foreign policy.

15. Soviet leaders have not yet been prepared clearly to renounce the idea of the global struggle against capitalism. That struggle continues today. In the West it is conducted primarily by means of propaganda, appeals to Western peoples over the heads of their elected representatives, and attempts to sow division between Western Governments; as well as by clandestine efforts to influence Western public opinion. All this is backed up by the potentially intimidating threat of the vast might of Soviet arms. Elsewhere, the concept has been put into practice by means of Soviet support for insurrections and revolution in Asia, Africa, Central and South America; and by direct invasion of Afghanistan.

16. So we return to the real questions raised by those who suggest that the West could unilaterally reduce its armaments in safety. Are the Soviet Union's intentions purely defensive? Is the strength of its nuclear and conventional forces merely over-insurance? Even if the answer to these questions were positive beyond a doubt, could we be certain that the Soviet Union would in future refrain from pursuing its own security at the expense of others'? Or that it would not attempt to use Soviet military potential to exercise political domination over a weakened and demoralised Western Europe? Or is there sufficient evidence to the contrary to give us pause for thought?

17. As we have sought to show, the combination of vast Soviet military might, together with a history of expansion and an adversarial ideology, must place on those who would take Soviet assurances on trust the burden of proof in demonstrating that the Soviet Union's intentions towards the West are — and will remain — as peaceful as its new leaders would wish us to believe. There is enough in this combination of factors to raise legitimate questions about how the Soviet Union might behave if it were not deterred by Western capability and will to resist any aggression. In the absence of unmistakable evidence of a change in long-term Soviet objectives — evidence that has not yet been forthcoming — a prudent policy for the West must remain one of caution.

18. At the same time, we must be ready to engage in dialogue with the Soviet Union to establish what scope Soviet policies allow for progress in East-West relations. And we must be prepared to respond to signs of change, as well as to opportunities for achieving serious arms control measures that will enhance security and stability, and so help to bring about the improvement in East-West relations that we all desire.

Arms Control

201 The search for balanced and verifiable arms control agreements, which provide for security at lower levels of weapons, is a central element of our security policy. This chapter chronicles significant developments during the last year, which has seen major advances in a number of areas, not least at the October summit in Reykjavik between the leaders of the two superpowers (see paragraphs 205-208). Clear priorities for the pursuit of arms control were subsequently set by the Prime Minister and President Reagan at Camp David in November; these are described in paragraph 209. Similar priorities were identified during the Prime Minister's visit to Moscow this spring (see paragraph 210).

NUCLEAR ARMS CONTROL

US-Soviet Negotiations

202. In the **strategic** area the United States, with the full support of the United Kingdom and the NATO allies, has continued to seek deep cuts in US and Soviet arsenals. To that end, in November 1985 the US Administration had tabled proposals for 50% cuts. Notwithstanding Mr Gorbachev's proposal in January 1986 for the complete elimination of nuclear weapons by the year 2000, these stayed unanswered until June, when the Soviet Union made proposals for cuts of approximately 30%, conditional on: tight new constraints on the US Strategic Defence Initiative (SDI); an extension of the period of notice of withdrawal from the Anti-Ballistic Missile (ABM) Treaty to 15 years; and constraints on US forces based in Europe. Although aspects of the Soviet proposals were unacceptable, they did include one positive advance, in moving away from the previous one-sided definition of the strategic weapons to be covered.

203. In July 1986, President Reagan responded with a letter to Mr Gorbachev in which he made clear that, while the United States would prefer 50% reductions in strategic weapons, lesser reductions could also be accepted as an interim step. In September, the United States accordingly tabled further detailed proposals at Geneva.

204. There was also movement on **intermediate-range nuclear forces** (INF). The US proposal in February 1986 had sought a phased elimination of long-range INF (LRINF) missiles; while previous proposals for an interim agreement, some missiles being retained by each side, remained on the table. In September 1986 Soviet negotiators indicated interest in an interim agreement that would leave 100 missile warheads on each side in Europe. This offered some hope of further progress towards an agreement embodying the Alliance goals of equal global ceilings for US and Soviet systems.

205. These developments were taken significantly further at the meeting in Reykjavik between President Reagan and Mr Gorbachev. For some time attention had focused on the prospects for a second US-Soviet summit meeting, which at the 1985 (Geneva) summit it had been agreed should be held in the United States. The two leaders eventually decided in late September, at short notice, to meet at Reykjavik on October 11-12.

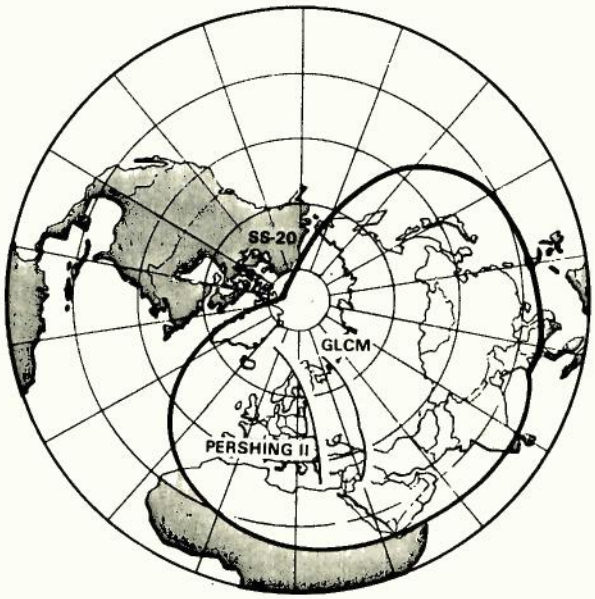
206. This meeting was not initially intended to negotiate major arms control agreements. But in the event substantial progress was made on strategic, INF and other issues. In the strategic arms group, the two sides reached provisional agreement on 50% cuts leading to equal ceilings of 1,600 strategic nuclear delivery vehicles and 6,000 warheads; and the Soviet Union agreed to cuts in its heavy intercontinental ballistic missiles. The Soviet Union tabled a proposal for the elimination of all strategic nuclear weapons within ten years; the United States responded with a proposal linking the elimination of all offensive ballistic missiles to a ten-year non-withdrawal period from the ABM Treaty. In addition, the two sides moved closer together on the outline of an INF agreement, involving zero deployments of LRINF missiles in Europe, and 100 warheads on each side elsewhere — the Soviet missiles to be stationed in Soviet Asia and the American missiles in the continental United States.

207. A major stumbling-block to agreement on reductions in both INF and strategic systems was, however, Soviet insistence on a linkage to SDI research programmes, as a condition for agreement. The Soviet Union sought severe new constraints on the SDI, while the scope of its own activities in this area remained still unacknowledged. President Reagan made clear that he was not prepared to accept such constraints, although he would agree to the extension of the withdrawal period of the ABM Treaty for up to ten years while reductions in strategic weapons took place. The Soviet side also sought to impose a new linkage to agreement on nuclear testing issues. Because of Soviet insistence on these linkages — even as regards INF, which the Soviet Union had previously stated could be settled independently — it was not possible to reach agreement. In February of this year, in the face of Western refusal to accept this illogical linkage, the Soviet Union finally accepted the US offer to negotiate a separate agreement on INF. The United Kingdom has welcomed this step, and we hope that the remaining issues, including verification,will be addressed constructively.

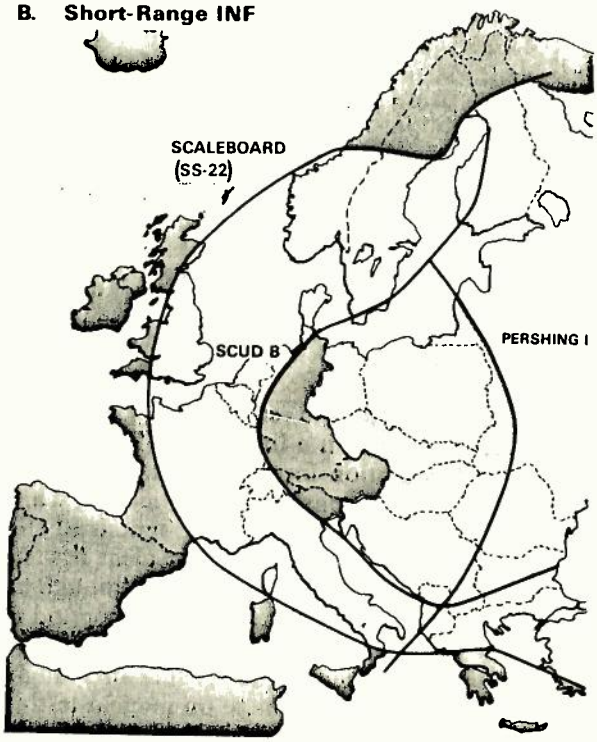
208. One particular issue that remained unresolved at Reykjavik was the question of constraints on shorter-

Figure 1 Ranges of Intermediate Nuclear Systems (from current deployment areas)

A. Long-Range INF



B. Short-Range INF



range INF missiles (SRINF) (of 150km to 1,000km range). It had long been part of NATO's position that any INF agreement would need to include adequate constraints on Soviet Scaleboard (SS-22) and SS-23 SRINF missiles, which could otherwise undercut an INF agreement on cruise, Pershing II and SS-20 missiles. It is also important that an INF agreement should be followed by negotiations aimed at addressing the imbalance in shorter-range systems, and at dealing further with LRINF. We are discussing with our allies how these questions should be handled. The Soviet Union has not accepted that the West should have the right to match Soviet SRINF systems, but has merely indicated willingness to freeze missiles in Europe with ranges in a band below 1,000km and thereafter to discuss reductions below present numbers.

Camp David Meeting

209. Following the Reykjavik summit, the Prime Minister met President Reagan at Camp David in November to discuss the way forward. They agreed that:

- priority in the search for arms control agreements should be given to:
  - an INF agreement with restraints on shorter-range systems;
  - a 50% cut in US and Soviet strategic offensive weapons; and
  - a ban on chemical weapons;
- in all three cases effective verification would be an essential element;
- NATO strategy would continue to need effective nuclear deterrence, based on a mix of systems, and reductions in nuclear weapons would increase the importance of eliminating conventional disparities;
- nuclear weapons could not be dealt with in isolation, given the need for a stable balance at all times;
- the SDI research programme which is permitted by the ABM Treaty should continue; and
- these matters should continue to be subject to close consultation within the Alliance.

The President also reaffirmed that the United States v proceeding with its strategic modernisation programm.., including Trident, and confirmed his full support for the British acquisition of the system. The priorities agreed at that meeting were endorsed by the Ministerial meetings of the Eurogroup and of NATO's Defence Planning Committee and North Atlantic Council in December 1986. They reflect a considered view on the most practical possibilities for progress.

The Prime Minister's visit to Moscow

210. During the Prime Minister's visit to Moscow this spring, she agreed with Mr Gorbachev that priority should be given to an agreement on INF, with strict verification, constraints on shorter-range systems, and immediate follow-on negotiations to deal more fully with shorter-range systems. The two leaders also agreed that priority should be given to negotiating a ban on all chemical weapons; and that there should be early negotiations on reductions in conventional forces. The Prime Minister expressed her support for a 50% reduction in US and Soviet strategic nuclear weapons. It was clear from the talks that the two sides agreed that progress on

Figure 2 A Guide to Nuclear Weapons

Strategic Nuclear Forces — Typical System Range: over 5500 Kms

Intercontinental Ballistic Missiles (ICBM)		**US** Titan II Minuteman II Minuteman III MX	**USSR** SS-11 SS-18 SS-13 SS-19 SS-17 SS-25
Bombers		**US** B52 FB 111 B1	**USSR** Bear Bison
Submarine-Launched Ballistic Missiles (SLBM)		**US** Poseidon Trident **UK** Polaris	**USSR** SS-N-6 SS-N-17 SS-N-8 SS-N-18 SS-N-23 SS-N-20

and-Based Intermediate-Range Nuclear Forces (INF) — ange: 150 to 5500 Kms

Missiles		**NATO** GLCM Pershing I Pershing II	**Warsaw Pact** SS-20 SS-4 Scaleboard (SS-22) Scud SS-23
Aircraft		**NATO** F4 F111 F16 Tornado F104	**Warsaw Pact** Backfire Fishbed Badger Flogger Blinder Fencer Fitter Fulcrum

Land-Based Short-Range Nuclear Forces — Range: under 150 Kms

Missiles		**NATO** Lance	**Warsaw Pact** Frog SS-21
Artillery		**NATO** 155 mm 203 mm	**Warsaw Pact** 152mm 203mm 240mm

arms control required a step-by-step approach, with clearly identified priorities, and that there was broad agreement on those priorities. The Prime Minister made clear that she was hopeful that a satisfactory agreement on INF could be reached by the end of this year.

The British and French Deterrents

211. Throughout the last year the United Kingdom and the NATO allies had continued to insist that they would not accept Soviet attempts to involve the British and French national deterrents in the Geneva negotiations. The condition was, however, dropped by Mr Gorbachev at his press conference at Reykjavik, when he said:

> 'We decided today ..... to withdraw completely the question of French and British missiles in general, to leave it to one side. And let them remain as an independent force, let them increase and be further improved.'

212. This was a welcome step. Alliance cohesion had revealed the Soviet condition for the tactical ploy it always was. The Soviet acknowledgement of this will have helped the negotiations to concentrate on the most important priority — reductions in US and Soviet arsenals, which far outweigh the United Kingdom's minimum deterrent, or that of France. The Government has, however, made clear that our conditions for involving the British deterrent in arms control remain unchanged: if US and Soviet strategic arsenals were to be very substantially reduced, and no significant change had occurred in Soviet defensive capabilities, Britain would review its position and consider how best to contribute to arms control in the light of the reduced threat.

Nuclear Testing

213. While our first priority is reductions in nuclear weapons, the United Kingdom remains committed to progress towards a **Comprehensive Test Ban** (CTB). Despite many claims to the contrary, important verification problems remain unresolved, and the United Kingdom is working for their resolution at the Geneva Conference on Disarmament.

214. A CTB is clearly not a near-term prospect. Nonetheless, more limited steps are possible, and some welcome progress was made during the year. After a series of US invitations for Soviet observers to inspect a US test, so as to improve verification techniques, the two superpowers began a series of bilateral discussions on verification issues. In September, President Reagan outlined at the United Nations General Assembly the proposals he had put to the Soviet Union. These were that: the United States was ready to move forward on the ratification of the threshold nuclear testing treaties signed in the 1970s, and would put them into effect once agreement had been reached on improved verification techniques; and that the two sides would then go on to discuss a step-by-step programme of further limiting nuclear tests, in association with the reduction of nuclear weapons. The United Kingdom has very much welcomed this practical approach to constraints on testing. President Reagan has now taken the first step in this process by requesting the US Senate's advice and consent to the ratification of the threshold treaties, subject to the verification improvements referred to above.

215. The Soviet Union continued with its announced moratorium on nuclear testing for most of the year, declaring its end with a test in February 1987. It also continued with its advocacy of an immediate CTB, while refusing to accept the practical proposals put forward by the West to help resolve the verification issues. At Reykjavik Soviet leaders appeared to endorse the US proposal for a step-by-step approach; subsequently, however, they moved back from this position and proposed simultaneous negotiations on all elements in

the US phased approach, including immediate negotiation of the CTB. We hope that Soviet leaders will re-confirm their acceptance of the step-by-step approach and agree to practical steps to follow it up.

SDI

216. Early this year the United States opened discussions with the United Kingdom and the other NATO allies on the future of SDI, and, in particular, whether it should be carried out within the broad, rather than the narrow, interpretation of the ABM Treaty, and whether early development decisions needed to be taken on some SDI research projects. Such a decision would have important implications for the consideration of the future place of ballistic missile defences in the strategic relationship, for arms control, and for the conduct of British participation in SDI research (see paragraphs 524-528). Allied consultations are continuing.

Chemical Weapons and Arms Control

The Warsaw Pact Capability

1. The Warsaw Pact has the capability to conduct chemical warfare (CW) against NATO forces on a very large scale, and produces and stockpiles a range of lethal agents and incapacitants. The lethal agents currently produced and stockpiled include nerve, blister, blood and choking agents. Research into new agents continues, including in areas that will blur the distinction between chemical and biological weapons. The Warsaw Pact has troops who specialise in CW, and the ordinary Serviceman is trained in CW doctrine and tactics.

2. Warsaw Pact forces have various means of delivering chemical attacks by land- and sea-based systems and from missiles and bombs. The variety of delivery systems, together with the range both in type and persistency of chemical weapons, would allow Warsaw Pact forces to use chemical weapons very flexibly.

The NATO Response

3. The United Kingdom gave up its CW capability in the late 1950s, and no change to that policy is planned. Our research effort is now devoted entirely to defensive and protective measures, to which all NATO allies attach considerable importance. Given the Soviet capability, we place the highest priority on the negotiation of a verifiable and comprehensive worldwide ban on chemical weapons. The United States has produced no such weapons since 1969. We believe that the United States' moves towards modernising its limited retaliatory CW capability, outlined in last year's Statement, will underline to the Soviet Union the benefits of reaching early agreement on such a ban. Thus we supported NATO's adoption in May 1986 of a Force Goal inviting the United States to modernise its chemical weapon stocks with binary munitions. In the event that it is not possible to achieve the ban we desire, modernisation of US chemical weapons would contribute to upholding NATO's deterrent strategy of flexible response.

4. The US Government has said that it has no plans to base binary chemical munitions in any foreign country in peacetime. We have not been approached about the possible contingency deployment of chemical weapons specifically to this country, and we have made clear that, if such a request were ever to be received, it would be a matter for decision by the Government of the day, in the light of all the circumstances prevailing at the time. Any deployment of chemical weapons to the United Kingdom at any time would require the consent of the British Government.

Progress towards a Ban

5. The past year has seen good progress in the Conference on Disarmament in Geneva towards negotiating a ban on the production, stockpiling and deployment of chemical weapons. The United Kingdom held the chairmanship of the *Ad Hoc* Committee on chemical weapons for the 1986 session. The talks gathered momentum during the session, and agreement on some aspects of the Convention was achieved. As with other arms control agreements, provisions for verification will be the key to an effective chemical weapons convention. The 1986 session saw movement on some aspects of verification. Agreement in principle was reached on inspection of the destruction of chemical weapon stockpiles and on inspection of production facilities, as well as of the civil chemical industry. A major outstanding issue remains the question of arrangements for special inspection on challenge, when one party believes that a breach of the Convention has occurred.

6. In an attempt to unblock this impasse, the United Kingdom last July launched an important initiative on 'challenge inspection'. The British proposals require the state that is challenged to demonstrate that it is complying with its obligations within a specified timescale. These proposals are now under discussion.

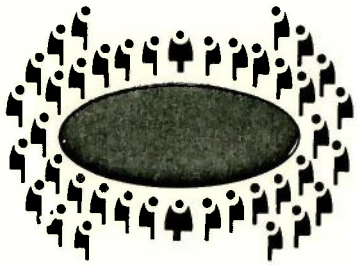
7. The need for a comprehensive global ban on chemical weapons has been reinforced by evidence of their use by Iraq in the war with Iran. The British Government, in an attempt to make proliferation more difficult, has imposed export controls on a range of chemicals; and in addition has issued an extensive warning list of chemicals to assist British industry in detecting any orders that may potentially be misused for the production of chemical weapons. Although these measures help to reduce the risk of proliferation, we firmly believe that a global, verifiable and comprehensive ban on chemical weapons is the only real solution.

Figure 3

Arms Control Fora

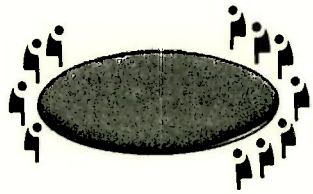
1. Nuclear and Space Talks (NST)

US-Soviet negotiations on nuclear and space arms control opened in Geneva in March 1985. Their agreed aim is to work out effective arrangements for preventing an arms race in space and terminating it on earth; for limiting and reducing nuclear arms; and for strengthening strategic stability. The negotiations are divided into three groups: on space and defence; strategic arms; and intermediate-range nuclear forces (INF).



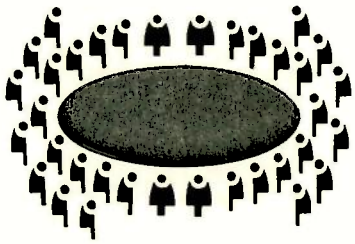
2. Conference on Disarmament (CD)

CD meets in Geneva under the auspices of the United Nations. 40 nations participate (and were listed in last year's Statement). The Conference covers a wide range of arms control issues, of which the most important involves negotiations on a worldwide ban on chemical weapons. The CD reports annually to the General Assembly of the United Nations.



3. Mutual and Balanced Force Reductions (MBFR)

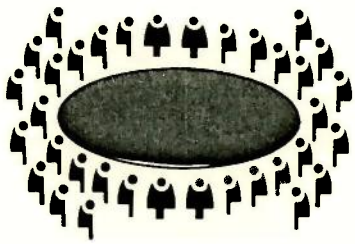
These talks began in Vienna in 1973. Their aim is 'to contribute towards a more stable relationship and to the strengthening of peace and security in Europe by the mutual reduction of armed forces and armaments and associated measures in Central Europe' — an area defined as East and West Germany, Belgium, the Netherlands and Luxembourg, Poland and Czechoslovakia. The direct participants in the talks are those countries (excluding France) that have forces in this area — the United States, Britain, Canada, the Federal Republic of Germany, Belgium, the Netherlands, Luxembourg, the Soviet Union, the German Democratic Republic, Poland and Czechoslovakia (but other members of NATO and the Warsaw Pact are 'indirect participants').



4. Conference on Security and Cooperation in Europe (CSCE)

Meeting in Helsinki in 1975 this conference agreed what has become known as the Helsinki Final Act, under which participants accepted obligations covering security, political, economic and humanitarian issues. Compliance with the Final Act, and subsequently with the Madrid Concluding Document, has been reviewed at Follow-up Meetings in Belgrade (1977-78); Madrid (1980-83); and Vienna (which began in November 1986 and is still under way).

The 35 participating states are all European countries, except Albania, plus the United States and Canada.



5. Conference on Disarmament in Europe (CDE)

CDE opened in Stockholm in January 1984 with the same 35-nation membership as CSCE. Its mandate, given by the Madrid CSCE Follow-up Meeting, was to extend the scope of security obligations under the Helsinki Final Act, and thus to reduce still further the risk of war, by agreeing Confidence- and Security-Building Measures that were militarily significant, politically binding, verifiable and covered all Europe from the Atlantic to the Urals. Agreement was reached in September 1986.

CONVENTIONAL ARMS CONTROL

217. Progress in nuclear disarmament increases the importance of achieving matching progress in the area of conventional forces, where the balance, as Annex A shows, is very much in favour of the Warsaw Pact — a central fact that the Warsaw Pact's Budapest Appeal, issued on 11 June 1986, ignored in proposing equal reductions by each Alliance. On 11 December NATO Foreign Ministers issued the **Brussels Declaration,** based on the report of the high level task force set up at the meeting of NATO Foreign Ministers in Halifax the previous May. This calls for two sets of distinct negotiations on conventional arms control in the whole of Europe from the Atlantic to the Urals: one set to build on and expand the Confidence- and Security-Building Measures agreed in Stockholm in September (see below); and the other focusing on the conventional forces of NATO and the Warsaw Pact from the Atlantic to the Urals.

218. The Brussels Declaration notes that, for such negotiations to succeed, there must be recognition of the facts and common understandings on objectives and methods. The objectives should be:

- the establishment of a stable and secure level of forces, geared to the elimination of disparities;
- a negotiating process that proceeds step by step, and which guarantees the undiminished security of all concerned at each stage;
- to focus on the elimination of the capability for surprise attack and initiation of large-scale offensive action;
- measures to build confidence;
- application to the whole of Europe, taking account of regional imbalances; and
- an effective verification regime.

The Brussels Declaration demonstrates NATO's commitment to conventional arms control in Europe, and provides an opportunity and a basis for progress in establishing stability at lower levels of forces. Contacts between representatives of NATO and Warsaw Pact countries on a mandate for these negotiations began on 17 February in Vienna.

219. Meanwhile, at the **Mutual and Balanced Force Reductions** (MBFR) talks in Vienna, we and our NATO allies continue to seek an agreement on reduced levels of forces in Central Europe. The Western proposal, tabled in December 1985 by the United Kingdom, was designed to offer a constructive way forward. In particular, to meet Eastern objections the West proposed, as an important concession, that agreement on the current size of either side's forces — for long the major stumbling-block to progress — be deferred while an initial reduction in US and Soviet forces was made. So far the East has failed to respond seriously.

220. The **Biological Weapons Convention** of 1972 represents an important international commitment to the elimination of this horrendous form of warfare. The Second Review Conference of the Convention was held in Geneva in September 1986. It ended successfully, with the unanimous adoption of a series of confidence-building measures that strengthened the authority of the Convention.

Confidence-Building Measures

1. Creating a basis of trust between East and West is just as important as securing arms control agreements. We cannot achieve real security so long as either side lacks confidence in the other, or the risk of war through accident or misunderstanding exists. That is why NATO attaches importance to the process launched by the Helsinki **Conference on Security and Cooperation in Europe** (CSCE) in 1975, and subsequently in the Stockholm **Conference on Disarmament in Europe** (CDE), described in Figure 3.

2. An important achievement last September was agreement in CDE on a substantial package of Confidence- and Security-Building Measures. This accord, known as the Stockholm Document, is the first major arms control agreement since SALT II was signed in 1979. It promises to bring a greater degree of openness and predictability to military activities in the whole of Europe from the Atlantic to the Urals, thereby reducing tension, mistrust and the risk of military confrontation through accident or misunderstanding. Its most significant elements are:

- notification, 42 days in advance, of military activities in Europe from the Atlantic to the Urals involving at least 13,000 troops or 300 tanks. Amphibious or airborne activities involving at least 3,000 troops to be similarly notified;
- observers from all 35 CSCE states to be invited to all notifiable activities involving at least 17,000 land forces, or at least 5,000 amphibious or airborne troops;
- the exchange by 15 November each year of annual calendars of notifiable military activities expected to take place during the following year. Signatory states have agreed that exercises involving at least 40,000 personnel must be included in these calendars, otherwise they will not be permitted;
- inspection arrangements giving each participating state the right to conduct inspections on the territory of other participating states if there should be doubts about compliance.

The accord came into force on 1 January this year and represents an important political commitment by all 35 participating states. Its success will depend, however, on its being implemented fully in the spirit of that commitment.

3. The latest of the CSCE Follow-up Meetings opened in Vienna on 4 November 1986. The 35 participating states have formally reviewed their records of compliance with the Helsinki Final Act and Madrid Concluding Document, and are considering ways in which the CSCE process might be developed in future. The British Government's aim is to press the East for real progress on compliance, especially on human rights commitments, and to seek balanced progress between the military, security, political, economic and human dimensions of the process.

Nuclear Weapons and NATO Strategy

1. The basic principle at the heart of NATO strategy, supported for nearly 40 years by all members of the North Atlantic Alliance, has been nuclear deterrence. At once simple and yet paradoxical, it is based on the idea that the surest way to preserve peace between East and West, without jeopardising the freedom of our peoples, is to face a potential aggressor with a clear risk that the costs of aggression would amply outweigh any conceivable gain; and that the use of force is hence no longer a rational option. Thus the purpose of NATO's possession of nuclear forces is to ensure that circumstances never arise when we might have to consider using them.

2. NATO could not achieve such deterrence by conventional weapons alone. An adversary who no longer faced the risk of nuclear retaliation might once again regard force as a usable option, since the costs of aggression might no longer appear prohibitively high. Moreover, a defence based solely on conventional weapons would have no prospect of success against a nuclear-armed adversary. For it would always be open to an adversary who retained his nuclear weapons to use them, or threaten their use, to overcome any conventional resistance. Indeed, the more successful the conventional defence, the greater the incentive might be for a nuclear-armed power to resort to nuclear weapons. NATO's one-sided abandonment of such weapons might therefore increase the risk not merely of conventional war but also of nuclear use against NATO.

3. In 1987 it is easy to forget that in the first half of this century the world was twice plunged into immensely destructive global conventional war, precipitated on both occasions by a state numerically weaker than the combination of states that faced it. In the last century Europe was torn asunder by several major wars. By contrast, in the 40 years since the end of the Second World War — 40 years of nuclear deterrence — there has been no war in Western Europe, either conventional or nuclear, in spite of deep ideological hostility between East and West. This is a striking achievement, which those opposed to nuclear weapons, whether on moral or other grounds, would do well to ponder. They must explain how it is morally preferable to make Europe once again 'safe' for conventional war — a war in which modern weapons could bring destruction on a scale never seen before, and which could in the end provoke the very use of nuclear weapons that they seek to avoid.

4. Nuclear weapons on their own are not, however, sufficient for a credible deterrence strategy. Indeed the nature and scope of the nuclear component of the Alliance's deterrence forces have varied over time. In the early 1950s, faced with massive conventional forces in Eastern Europe, the NATO countries relied principally on the ability of the United States to inflict a massive nuclear strike on the Soviet Union. But the growth of the Soviet nuclear arsenal in the late 1950s and 1960s — and in particular the Soviet acquisition of long-range nuclear weapons capable of striking the United States —meant that NATO needed to widen its options for responding to either a conventional or a nuclear attack. So NATO evolved in the 1960s a new strategy of 'flexible response'; and this remains its strategy today.

5. For the strategy to work requires the existence of the US nuclear guarantee, backed by a strong US conventional presence in Europe. But it is a fundamental principle of the Alliance that the risks and benefits of a collective security policy be fully shared. In the nuclear field, concrete expression is given to this by the direct participation of European nations in the provision of the Alliance's deterrent forces. Belgium, the Federal Republic of Germany, Greece, Italy, the Netherlands, Turkey and the United Kingdom, all provide delivery systems and units trained in nuclear operations for the delivery of weapons that remain under US custodial control. Among these are dual-capable aircraft and artillery, and nuclear-dedicated systems such as Lance and Pershing missiles. The United Kingdom also assigns all its own nuclear forces to the Alliance, including both our strategic deterrent and theatre air-delivered weapons for aircraft and ship-borne anti-submarine helicopters. In addition, Alliance nations provide base facilities for US nuclear-delivery units, which are part of US forces in Europe. These include bases for US Poseidon submarines and the US Air Force in the United Kingdom, and US Air Force and Army units in the Central and Southern Regions of Allied Command Europe.

6. For a country to reject NATO nuclear strategy, while continuing (as NATO membership implies) to accept US nuclear protection through the Alliance, offers no moral merit. Nor would it offer the United Kingdom greater safety, for whether nuclear weapons are based here or not, our country's size and location make it militarily crucial to NATO and so an attractive target in war. A 'nuclear free' Britain would mean a weaker NATO, weaker deterrence, and a greater risk of war; and if war broke out we would if anything be more likely, not less, to come under nuclear attack.

7. To implement a strategy of nuclear deterrence, NATO has to maintain an effective stockpile of nuclear weapons. But deterrence does not require ever-increasing numbers of such weapons. On the contrary, NATO is firmly

committed to deploying only enough nuclear weapons to ensure deterrence, while at the same time seeking to negotiate deep reductions in the stockpiles of both sides.

8. This was demonstrated by the decision of NATO Ministers in October 1983 at Montebello to withdraw 1,400 warheads from the land-based nuclear stockpile in Western Europe in the period up to the end of 1988. The decision, taken together with the withdrawal of 1,000 warheads that had already taken place before October 1983, brought the total number of warheads to be removed from Europe since 1979 to 2,400. Furthermore, one existing warhead is being removed for each Pershing II or cruise missile deployed to Western Europe, so that such deployment results in no further net increase. Critics of this decision have argued that it is of little import, since the warheads withdrawn were in any event obsolescent. This is not only untrue — many of the weapons being withdrawn are still very effective — but misses the point: for NATO *might* have decided to retain a larger stockpile and subsequently to replace these weapons with equal numbers of modernised versions.

9. This reduction by NATO was unreciprocated by the Warsaw Pact. Deterrence could be assured at lower levels of armaments provided the Soviet Union were prepared to reduce, too, so that there were balance between the two sides and both were assured of their own security. For many years the search for balanced, equitable and verifiable measures of arms control has been a slow one; but over the past 12 months real progress has been made, as we describe in Chapter 2.

10. As we record there, however, nuclear weapons cannot be treated in isolation. It is also necessary to consider the wider balance of forces between East and West and the Warsaw Pact's massive superiority in chemical and conventional weapons. The ever-increasing strength of these Soviet armaments casts a shadow over Western Europe. Reductions in nuclear weapons increase the importance of eliminating these other disparities and ensuring a stable overall balance. But as long as the basic tensions between East and West are undiminished, NATO will need to continue to rely on a strategy of nuclear deterrence based on an effective mix of systems. Nuclear weapons will remain as vital for keeping the peace — for preventing conventional as well as nuclear war in Europe — as they have been for the past 40 years.

British Defence Policy

THE ATLANTIC ALLIANCE

301. The North Atlantic Treaty Organisation is the foundation of this country's defence and security policy. Indeed, we are convinced that this Alliance of 16 sovereign states, each freely a signatory to the North Atlantic Treaty, remains the only realistic way of providing for our defence. NATO's deterrence policy is encapsulated in the strategy of forward defence and flexible response. This strategy threatens no-one: NATO leaders have made clear that none of our weapons will ever be used except in response to an attack. Our primary aim remains the prevention of war; our secondary aim, should war occur, is to respond at the appropriate level to stop the aggressor in his attack and make him withdraw. We believe that this strategy is still serving us well.

302. It is towards maintaining the Alliance's ability to deter war that our defence effort is directed. Our contribution to NATO accounts, directly or indirectly, for more than 95% of our defence budget. The vast majority of our forces are committed to one or other of the three major NATO commands — Europe, Atlantic and Channel. The United Kingdom remains the only European NATO member to contribute to all three elements — strategic nuclear, theatre nuclear and conventional — of NATO's triad of forces. We are determined to continue making a full political and military contribution to the Alliance.

303. Our four main roles in NATO are:

— **the provision of nuclear forces,** including the maintenance of an independent strategic nuclear deterrent;

— **defence of the United Kingdom itself,** our homeland and a vital support base for the Alliance;

— **land and air forces based in Europe** and contributing to forward defence, together with the capability for massive reinforcement from the United Kingdom if required; and

— **maritime forces** in the Eastern Atlantic and Channel areas, and contributing to forward defence in the Norwegian Sea.

We also contribute specialist reinforcements with deployment options mainly on NATO's Northern Flank, which is of particular strategic importance for the United Kingdom. Some of the reinforcements that we provide for NATO's Supreme Allied Commander Europe (SACEUR) do, however, also have deployment options in the Southern Region of the Alliance. In addition, on the Southern Flank, the United Kingdom contributes to NATO's ability to control the strategically important Gibraltar Strait. British forces are based there for the defence of Gibraltar itself, and the Rock provides facilities for exercising in the region and naval and maritime air headquarters, which form part of the NATO command structure in the Mediterranean.

304. This country also retains important defence responsibilities and interests outside the NATO area. These are described on page 22.

The European Pillar

305. Successive Statements on the Defence Estimates have used the analogy of twin pillars, European and North American, supporting a transatlantic bridge to illustrate how the Alliance depends on the partnership of the Old World and the New. To weaken either pillar would endanger the whole structure of deterrence on which our security is based. After a year in which voices have again been raised questioning the US presence in Europe, the paramount importance of maintaining the North American commitment to the Alliance is discussed on page 18.

306. As we explain there, there can be no substitute for the contribution made to collective security by the presence of substantial US and Canadian forces in Europe. But the contribution made by the European members of the Alliance is also substantial and contributes significantly to the collective defence; it can be further strengthened by greater cooperation between us. The United Kingdom is therefore committed to the maintenance and development of bilateral relations with our European allies, and to playing a major part in the work of the main multilateral organisations devoted to European security cooperation and equipment collaboration.

307. **The Eurogroup's** collaborative sub-groups aim to concert members' policies and practices, at the working level, in the fields of logistics, communications, training, medicine and long-term operational concepts. The group also does valuable work in the United States to publicise the extent of European defence efforts. The six-monthly meetings of Eurogroup Defence Ministers both direct this work and provide an opportunity for informal discussion of defence issues. In October 1986, experts met in Odense to explore the difficulties faced in the management of defence budgets and ways of making better use of available resources. Eurogroup Ministers agreed last December that this work should be pursued.

The Western European Union

1. The Western European Union (WEU) is founded in the revised Brussels Treaty of 1954, at the heart of which is the commitment in Article V whereby the signatories undertake to afford one another 'all the military and other aid in their power' should one of them be 'the object of an armed attack in Europe'. It is under the Brussels Treaty that the British Government maintains an army and air force on the continent of Europe in peacetime, an obligation that is historically unique. The Treaty thus embodies the United Kingdom's fundamental commitment to a collective security together with our partners, yet is set firmly within the framework of the Atlantic Alliance. The WEU thereby makes an important contribution to strengthening the European pillar of the Alliance.

2. Since its reactivation in 1984, the WEU has been the only European organisation in which both Defence and Foreign Ministers of the seven member countries (Belgium, France, the Federal Republic of Germany, Italy, Luxembourg, the Netherlands, and the United Kingdom) can meet to discuss defence and security issues of significance to Western Europe. The aim of these discussions is to stimulate clearer understanding of European security needs. But the WEU is not an operational forum, nor one in which collective decisions are reached. In its activities, it seeks to reinforce rather than duplicate work done in NATO, and to ensure that the European in- to the Alliance is coordinated and coherent.

3. WEU Ministers met twice during 1986, in April and November at Venice and Luxembourg; their Luxembourg meeting presented a particularly useful opportunity to discuss issues of specific concern to Europe raised by the meeting between President Reagan and Mr Gorbachev at Reykjavik. They have also examined the progress made in WEU reactivation, and agreed that the organisation in its present re-structured form should run unhindered until the end of this year. They will then undertake a review with the object of sign-posting the way ahead. The aim should be to establish the WEU as a focal point of the European security identity and to ensure that its working methods are soundly based for this purpose.

4. Meanwhile, another important aspect of the WEU is its Assembly, which comprises representatives from the national Parliaments of WEU member countries. It is the only European Parliamentary body specifically empowered by Treaty to debate defence and security questions. As such, it has unique possibilities for stimulating informed debate, and for generating better public understanding of the issues involved. Through dialogue with the Assembly, Governments' views can become more widely known and form an essential element of the debate. The Assembly will be important to the future of the WEU and of European security cooperation.

308. Equipment collaboration is an increasingly important aspect of efforts to strengthen NATO's European pillar. Defence equipment is expensive, and collaboration can help to share development costs and avoid wasteful duplication of effort; lower unit costs may make it possible to deploy a greater total number of equipments. Collaboration also helps to achieve standardisation and inter-operability. The **Independent European Programme Group** (IEPG) seeks to make better use of the resources that members devote to defence procurement, and its progress during the past few years provides further tangible evidence of the European countries' willingness to work effectively together. Further details of progress in equipment collaboration, including the work of the IEPG, are given in Chapter 5.

309. We shall press on with our efforts in these fora. For we believe that a more cohesive Europe will be able to make a contribution to the Alliance that is far greater than the sum total of individual European contributions.

NATO DEFENCE PLANNING

Conventional Force Planning

310. A prerequisite of maintaining effective deterrent forces is successful forward planning. NATO has a highly developed and effective biennial defence planning process, which involves the Defence Ministers of all the countries participating in the integrated military structure. The purpose of this process is both to encourage nations to develop their national plans in directions beneficial to the Alliance as a whole, and to monitor the progress made by nations in meeting agreed Alliance goals.

311. These goals are developed every two years by the Major NATO Commanders on the basis of Guidance issued by Ministers (also biennially, in odd-numbered years), which sets out the political, economic, military and technological factors that could affect the development of NATO forces and their impact on NATO strategy. The goals are adopted by the Defence Planning Committee (DPC) in the May of even-numbered years. Thus last May the DPC adopted Force Goals for the period 1987-92 based on Ministerial Guidance 1985. Member nations provided their first response to these Goals, recording their progress in implementing them, last autumn in reply to the annual Defence Planning Questionnaire. These responses were collated into a NATO five-year forward plan, which was considered by Ministers at the December 1986 DPC meeting. This May, Ministers will approve Ministerial Guidance 87, on which the Major NATO Commanders will base the development of their Force Goals for the period 1989-94, and which nations should use as a yardstick for constructing their forward programmes and plans.

312. For the past two years, NATO has devoted considerable effort to the Conventional Defence Improvements (CDI) exercise, described in greater detail below. One important aspect of this work has been the continuing development of a longer-term perspective, with a view to providing a coherent and coordinated framework looking up to 20 years ahead, within which national and international planning staffs can operate. For example, this year's Ministerial Guidance will draw on the Conceptual Military Framework developed by NATO's military authorities and provide improved guidance that looks further ahead. This will help to ensure that national planners receive guidance on NATO's military requirements at a stage when it can influence national planning of major new equipments.

Nuclear Planning

313, The nuclear component of the deterrent forces available to the Alliance receives special handling within the organisation. This is for a number of reasons: the special political sensitivity of nuclear issues, the special nature of the weapons themselves, and the recognition that, while there are only two nuclear weapon states participating in the integrated military structure, there is a need for broad Alliance cooperation and participation in the nuclear field. Out of this has grown NATO's Nuclear Planning Group (NPG).

314. Like the DPC, the NPG meets at both ministerial and ambassadorial level; the Ministerial meeting in October 1986 was held at Gleneagles in Scotland. The Group fulfils the need for a forum in which all concerned with NATO's defence policy and planning can pursue fundamental questions, such as how many and what type of nuclear weapons are needed to maintain deterrence, how they should be deployed, what procedures are required to give effect to proper participation and consultation, and so on. Such a forum also provides the opportunity for Alliance nations who do not have their own nuclear weapons to discuss with the nuclear weapons states the issues they must confront in planning their own, and the Alliance's, forces, including issues such as force modernisation, testing, and nuclear safety and security, and the vital question of nuclear arms control.

Conventional Defence Improvements (CDI)

1. Ministers attending the NATO Defence Planning Committee (DPC) meeting in December 1984 called for proposals to improve NATO's conventional defence posture so as to address the imbalance of forces favouring the Warsaw Pact, and to avoid being put in a position of undue reliance on the early use of nuclear weapons. In response to this mandate, a report was put to Ministers at the DPC in May 1985. This identified key deficiencies in the Alliance's conventional capability and allowed Ministers to set work in hand in those areas where a special effort would provide the greatest return for our collective defence. This is a vital aspect of the CDI exercise: it aims to improve the credibility of NATO's conventional forces by the careful and selective use of the substantial resources that individual nations devote to defence.

2. The CDI exercise is not a radical departure from traditional Alliance policy. It builds on the considerable progress made during the late 1970s and early 1980s in improving allied conventional capabilities through greater sustainability, improved readiness, better training and additional funding for common infrastructure projects.

3. The exercise is, however, an indication of the collective Alliance determination to maintain strong conventional forces and to come to grips with the rising real costs of equipment. In essence, it seeks greater focusing of national plans on collective Alliance needs; clearer military priorities; improvements in coordination between different planning areas; and greater emphasis on longer-term planning. As such, it was not intended to produce dramatic results quickly; sustained efforts will be necessary.

4. Steady progress is already being made in the field of force planning. The Force Goals for the period 1987-92, which were adopted by the DPC in May 1986, reflected priorities identified in the CDI exercise. Nations' responses to these Force Goals were considered by Ministers in the course of their Annual Defence Review at last December's DPC meeting. Ministers noted that considerable progress had been made towards a more effective conventional posture and expressed their determination to sustain the momentum of the exercise. Our own national equipment plans are well directed towards CDI-highlighted areas.

The American Pillar

'No-one of my generation can forget that America has been the principal architect of a peace in Europe which has lasted 40 years. Given this shield of the United States, we have been granted the opportunities to build a concept of Europe beyond the dreams of our fathers: a Europe which seemed unattainable amid the mud and slaughter of the First World War and the suffering and sacrifice of the Second.'

The Prime Minister.
Speech to a joint session
of the US Congress,
20 February 1985

1. These words reflect the views of a generation of people, few of whom would question the paramount importance of the transatlantic alliance that was forged in the years following the Second World War. But today, more than 40 years on from the war, Europe has changed beyond recognition: a new generation has grown up which has known only peace and prosperity, and for whom the war and its immediate aftermath are a matter of history. So it is appropriate to consider here the foundations on which the transatlantic partnership were based and their relevance for today's world.

2. The roots of the relationship between Europe and America run deep. The majority of North Americans have their origin on this continent; personal ties, and ties of history, language and culture are strong. The economic links between the two sides of the Atlantic are extensive. Above all, Western Europe and America share the same political and social values, not least among them a deep commitment to the principles of democracy and freedom — a commitment that was well demonstrated during the last war, when those principles came under the fiercest attack ever, from Hitler's totalitarian Nazism. North America's military intervention at that time made it possible to restore the freedom of Western Europe.

3. In 1945 the United States might have withdrawn into isolation as it had done in 1918. It did not because relations between the Western allies and the Soviet Union deteriorated rapidly after the war, and the US Government recognised that its primary strategic interest lay in helping to keep Western Europe free of Soviet control. A combination of idealism and enlightened self-interest led to an American commitment to counter the threat of communism wherever it occurred (the Truman Doctrine and the policy of 'containment') and to help the West European Governments implement their plans for post-war economic recovery (the European Recovery Programme, 1948-51). The continued Soviet military threat and, particularly, the events surrounding the Berlin blockade encouraged the Truman Administration, at the instigation of several West European countries, to commit the United States — in the North Atlantic Treaty of 1949 — to the defence of Western Europe.

4. The relationship has changed considerably in the past 40 years. Europe and the United States have drawn much closer together than they were before the last war. The genuine friendship that already existed between the two sides of the Atlantic has grown as personal contacts have increased. But we have not been without disputes and disagreements in the Alliance during that time. Americans have sometimes been irritated by the equivocation and confusion that has seemed to surround the Europeans' inability to 'get their act together', and by alleged European unwillingness to do more to defend themselves. There have been debates in Europe for some 25 years about the credibility of the US nuclear guarantee, and about the willingness of Americans to keep their troops in Europe. From President Eisenhower's day until now, there has been no lack of gloomy prophets on both sides of the Atlantic predicting the imminent end of the Atlantic relationship.

5. Today there is a new wave of unease and criticism. But the picture has been complicated by the fact that, to the traditional European anxiety about *maintaining* the US commitment to Europe, have been added opposite European voices who wish to see that commitment *reduced.*

6. Such questioning of the US presence in Europe requires an answer; for it throws into doubt the very foundations on which the Alliance has been based for so long. Behind it is often an implicit assumption that the Soviet Union no longer poses any threat, military or otherwise, to the West — an assumption that has little except wishful thinking to support it. In the first place, as we discuss on page 4 , we cannot ignore the ideological hostility of the Soviet Union towards the West; and secondly, the Soviet investment in military might, described in Annex A, has increased enormously since the last war. Whatever Soviet intentions towards the West might, or might not, be it would be the height of folly simply to rely on Soviet goodwill towards us in such circumstances.

7. The American commitment to Western Europe is essential. NATO's defence posture depends critically on the United States' nuclear forces, together with its theatre nuclear and conventional forces based in Europe. Without them we would have no credible defence in the face of the massive Soviet nuclear, chemical and conventional threat. Certainly a Europe-only option would not provide a credible alternative,

either in political or military terms.

8. The most visible proof of the American commitment is the 350,000 US Servicemen and women stationed in Western Europe. Successive US Governments have recognised that it is in Europe that the principal threat to the West lies, and it is therefore here that most of NATO's forces need to be deployed. Although Western Europe can rely on reinforcements from the United States these would take time to arrive, and ready forces are also required to meet those forces that the Soviet Union could bring quickly to bear in any conflict.

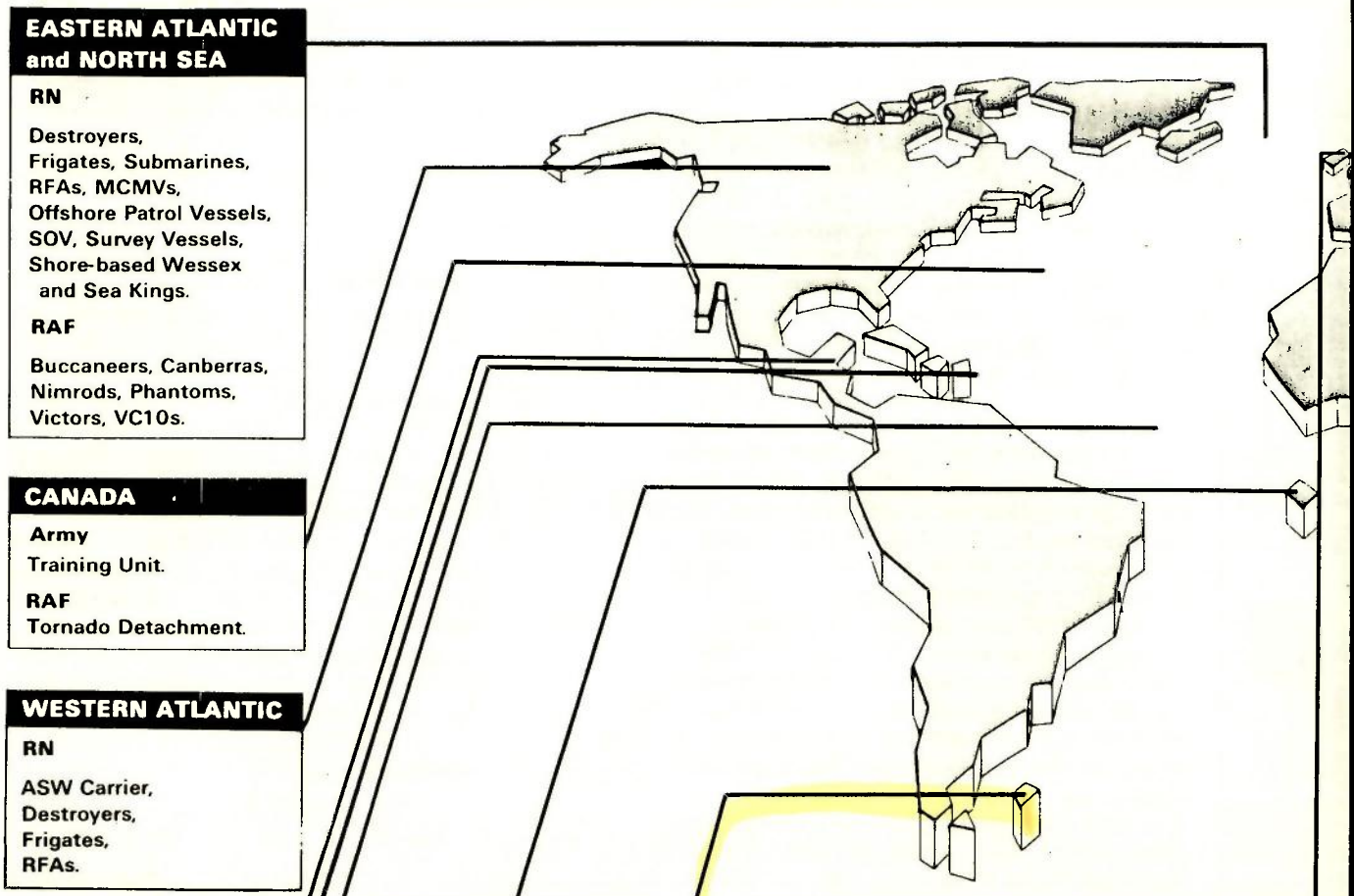
9. The presence of US forces here serves another purpose, too, by demonstrating the solidarity of the NATO Alliance. This is important because it is ultimately on Soviet perceptions of the strength and cohesion of the Alliance, and specifically the inevitable involvement of the United States in any conflict in Europe, that the success of NATO's strategy of deterrence depends. Evidence that the Soviet Union recognises the key importance of this cohesion can be seen in the efforts to which it has gone to divide Europe from the United States on such issues as the deployment of intermediate-range nuclear weapons and, more recently, on the Strategic Defence Initiative and arms control. Soviet efforts have failed, but not for want of skilful attempts to exploit particular European concerns.

10. A criticism sometimes heard is that the British Government has no control over US forces based in the United Kingdom. This is to ignore the understanding reaffirmed by Mr Churchill and President Truman in January 1952, which provided that use in an emergency of bases made available to the United States would be a matter for joint decision by the two Governments in the light of the circumstances prevailing at the time. The understanding covers the use of these bases by US forces equipped with nuclear or conventional weapons.

11. It follows from the above that, in the current international environment, to seek the withdrawal — or even partial withdrawal — of US forces from this country would carry very grave risks. It would weaken the military posture of the Alliance and send entirely the wrong signal to the Soviet Union about NATO cohesion and solidarity. It would reduce the chances of achieving successful arms control agreements with the Soviet Union. It would undermine the strategic link between the United States and Europe and the credibility of the US strategic guarantee. It would lead our allies to question our continuing commitment to the Alliance and to the defence of Europe. It would fuel tendencies towards isolationism in the United States and encourage other European members of NATO to follow suit. In sum, it would be a wholly irresponsible move.

12. US forces are here because neither North America nor Western Europe could carry the full burden of maintaining its own security alone. Thanks to the Alliance we are able to achieve a level of deterrence that would otherwise be unattainable. Together we can ensure that deterrence is maintained, that the burden remains tolerable and that peace is preserved.

Figure 4 Deployment of the Armed Forces, early 1987



EASTERN ATLANTIC and NORTH SEA

RN

Destroyers, Frigates, Submarines, RFAs, MCMVs, Offshore Patrol Vessels, SOV, Survey Vessels, Shore-based Wessex and Sea Kings.

RAF

Buccaneers, Canberras, Nimrods, Phantoms, Victors, VC10s.

CANADA

Army

Training Unit.

RAF

Tornado Detachment.

WESTERN ATLANTIC

RN

ASW Carrier, Destroyers, Frigates, RFAs.

BELIZE

Army

1 Armd Recce Troop,
1 Field Artillery Battery,
1 Engineer Sqn,
1 Infantry Bn,
1 Flight AAC.

RAF

Harriers, Pumas.
½ RAF Regt Sqn (Rapier).

WEST INDIES

RN

Destroyer, Submarines, RFA.

CENTRAL ATLANTIC

RN

Survey vessels.

ASCENSION ISLAND

RAF

Hercules.

FALKLAND ISLANDS

RN

Submarines, Destroyers, Frigates, Survey Vessel, Offshore Patrol Vessel, RFAs, STUFT.

Army

1 Infantry Bn Group, Supporting Arms and Services.

RAF

Phantoms, Hercules, Chinooks, Sea Kings, RAF Regt Sqn (Rapier).

NORTHERN IRELAND

RN

Patrol craft, RM Raiding Craft.

Army

HQ Northern Ireland,
2 Brigade HQs,
1 Engineer Sqn,
6 Resident Infantry Bns,
4 Roulement Infantry Bns (one may be RM Commando),
2 Sqns AAC,
9 Bns UDR.

RAF

Pumas, Wessex, RAF Regt Sqn.

GREAT BRITAIN

RN

ASW Carriers, Destroyers, Frigates, Submarines, MCMVs, Offshore Patrol Vessels, RFAs, Survey Vessels, Helicopters, Royal Marines Commando Forces, Royal Marines SBS, Royal Marines Forces for home defence.

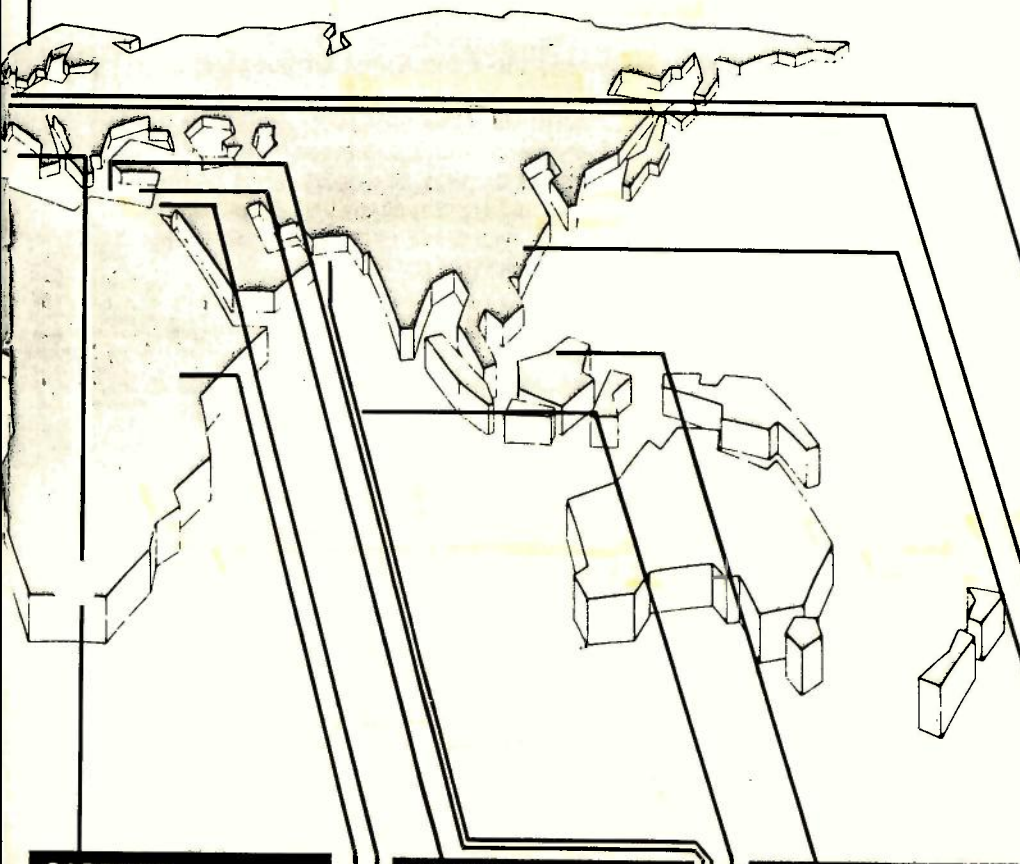
Army

Specialist Reinforcement Units for NATO, Reinforcements for BAOR, Forces for home defence, 1 SAS Regiment.

RAF

Andovers, Buccaneers, Canberras, Chinooks, Harriers, Hawks, Jaguars, Lightnings, Nimrods, Phantoms, Pumas, Hercules, VC10s, Sea Kings, Shackletons, Tornados GR1 & F3 Tristars, Victors, Wessex, communications aircraft & helicopters, Bloodhound, Rapier, Skyguard RAF Regt Sqn.

AAC	Army Air Corps	HQ	Headquarters	Recce	Reconnaissance
Armd	Armoured	LPD	Assault Ship	Regt	Regiment
ASW	Anti-Submarine Warfare	MCMV	Mine Countermeasures Vessel	RFA	Royal Fleet Auxiliary
BAOR	British Army of the Rhine	MFO	Multinational Force and Observers	SAS	Special Air Service
Bn	Battalion	RE	Royal Engineers	SBS	Special Boat Squadron



NORWAY (Exercises)

RN

RM Commando Brigade HQ,
2 RM Commandos with combat and logistic support,
Sea Kings and Wessex helicopters,
RM Assault Sqn.

Army

1 Infantry Bn Group.

RAF

Harriers, Jaguars, Pumas, Chinooks.

BERLIN

Army

Infantry Brigade

RAF

Support Units.

WEST GERMANY

Army (BAOR)

1 Corps HQ,
3 Armoured Divisions,
1 Artillery Brigade.

RAF Germany

Jaguars, Tornados, Phantoms, Harriers, Pembrokes, Andovers, Pumas, Chinooks, Rapier, RAF Regt Sqns.

HONG KONG

RN

Patrol Craft,
RM Raiding Sqn.

Army

1 Gurkha Engineer Regt,
1 UK Infantry Bn,
3 Gurkha Infantry Bns,
1 Squadron AAC.

RAF

1 Wessex Sqn.

SARDINIA

RAF

Phantom, Harrier, Tornado, Jaguar and Hawk detachments.

CHANNEL

RN

Destroyers, Frigates, Submarines, MCMVs, (ore Patrol Vessels, RFAs,
Shore-based Wessex and Sea Kings.

RAF

Canberras, Nimrods.

GIBRALTAR

RN

Frigate, Lynx.

Army

1 Infantry Bn.

RAF

Airbase detachments.

CYPRUS

Army

1 Armd Recce Sqn,
1 Engineer Support Sqn,
1½ Infantry Bns,
1 Flight AAC.

RAF

Phantom, Lightning and Tornado detachments,
1 Wessex Sqn,
1 RAF Regt Sqn.

UNFICYP Contingent

1 Armd Recce Sqn,
½ Infantry Bn,
1 Flight AAC,
Supporting Services.

SINAI

MFO Detachment.

KENYA (Exercise)

Army

1 Engineer Sqn

BRUNEI

Army

1 Gurkha Infantry Bn,
1 Flight AAC.

DIEGO GARCIA

RN

Naval Party,
RM Detachment.

THE GULF

RN

Destroyer, Frigate, RFA.

MEDITERRANEAN

LPD,
Destroyers.

SOV	Seabed Operations Vessel
Sqn	Squadron
STUFT	Ships Taken Up From Trade
UDR	Ulster Defence Regiment
UNFICYP	United Nations Force in Cyprus

Note: This map does not include 599 loan service personnel deployed worldwide

Outside the NATO Area

1. British defence policy is founded on the four major roles for which we commit forces to NATO. But we do have an additional range of commitments and activities, outside the NATO area, which are of quite a different type. They are not, to begin with, concerned with direct threats to the security of the United Kingdom: the forward defence of the Federal Republic of Germany may be the forward defence of Britain itself, but the forward defence of Hong Kong or Belize is not. Nor is our out-of-area policy primarily related to the threat from the Soviet Union: none of our out-of-area garrisons is constituted with Soviet aggression in mind, or even aggression by proxies of the Soviet Union. Why, then, do we need an out-of-area capability?

2. First, because of our history: we were a world power, and we retain some residual obligations dating from our imperial past. We are responsible for the defence of 13 dependent territories, ranging from Hong Kong to Pitcairn Island, as well as the Sovereign Base Areas of Cyprus. In addition, we have agreements with a range of former colonies and Gulf states.

3. Secondly, many thousands of British citizens are resident abroad. While their safety is primarily the responsibility of the Government of the country concerned, not all Governments are always in a position to protect it. Hence we have had occasion to use the armed forces to assist in evacuating British citizens in times of strife — notably from Cyprus in 1974, from Lebanon in 1984, and from Aden last year. Our interests lie, however, not in evacuating our citizens, but in regional stability, which enables them to live abroad in security.

4. Regional stability is important, too, because of our dependence on overseas commerce. Although some 80% of our visible trade is now with other developed countries, we are still vulnerable to interruptions in the supply of certain commodities, such as oil and strategic minerals, from remoter parts of the world. Helping to maintain stability and ensure the free use of the seas is therefore very much in our interests.

5. These considerations, together with the contribution that our out-of-area capabilities can make to our wider foreign policy aims, all generate a defence dimension to our activities outside the NATO area. These take several forms:

Permanent Garrisons

- We plan to keep a military presence on the **Falkland Islands** and in the Protection Zone at the level necessary to deter aggression and defend the Islands. Mount Pleasant airport was completed last year, the remaining facilities will be completed shortly, and most of the garrison has already moved there. The Royal Engineers have cleared military debris from Stanley airfield, and the land will be returned to the Falkland Islands Government. The concentration of the garrison at Mount Pleasant, and the ability that the airport gives us for rapid reinforcement of the Islands if necessary, have permitted some force reductions. Force levels remain under continual review in the light of the threat.

- We shall retain responsibility for the defence and internal security of **Hong Kong** until 1997, when control of the territory passes to the Government of the People's Republic of China. At present the garrison consists of four infantry battalions — three Gurkha and one British — and supporting units, together with Royal Navy and RAF elements. As foreshadowed in last year's Statement, our confidence in the stability of Hong Kong enabled us to reduce the strength of the garrison by one battalion, leading to the disbandment of the 2nd Battalion, 7th Gurkha Rifles, on 15 January 1987. Nearer 1997, it is planned to reduce the strength of the garrison still further, as the Royal Hong Kong Police begin to carry out a higher proportion of the internal security and other tasks currently carried out by the garrison. But all decisions will be taken in close consultation with the Hong Kong Government: we plan to maintain a garrison in the territory up to the date of transfer of authority in 1997. The Gurkhas will continue to have a role within the British Army after that date.

- A Gurkha battalion and supporting units are based in **Brunei**, at the request of His Majesty the Sultan. Brunei also provides exercise facilities for troops from the Hong Kong garrison; and home-based units take part in jungle training there.

- British forces are stationed in **Belize**, at the request of the Government, to protect the country from external aggression; and

a Royal Navy guardship is permanently assigned to the Caribbean in support. The election of a civilian government in Guatemala was a hopeful sign for progress towards a settlement of the territorial dispute, as was President Cerezo's statement that he wishes to resolve the differences between Belize and Guatemala. The United Kingdom and Guatemala agreed to resume consular links in August 1986 after a gap of nearly five years, and full diplomatic relations were resumed on 29 December 1986.

- In **Cyprus** we maintain two Sovereign Base Areas (SBAs); the role of the 4,000-strong British Forces Cyprus is to protect the SBAs and our other Retained Sites, to operate their facilities, to maintain the SBAs and RAF Akrotiri as Forward Mounting Bases for operations in the area, to provide training facilities for Army and RAF detachments, and to support the United Nations forces in Cyprus and the Near East (see below), which themselves include nearly 1,000 British troops.

Reinforcement and Support

- All our garrisons need regular support in peacetime, and all might need to be reinforced rapidly in time of tension. The capacity to do this is provided by each of the three Services. Although we do not maintain forces exclusively for operations outside the NATO area, we can (after consultation with our NATO allies) deploy substantial and well-balanced forces that could operate, if necessary, anywhere in the world.

- Ships of the **Royal Navy** are continuously deployed in the Arabian Sea area to assist British merchant shipping in the Gulf. The Navy also has vessels in Hong Kong, the West Indies and the South Atlantic, and an Ice Patrol Ship visits Antarctica during the summer. This coverage is supplemented by periodic Task Group deployments (see page 36) to many other parts of the world. Naval and amphibious operations could be sustained without shore support for a prolonged period by using the specialised replenishment vessels of the Royal Fleet Auxiliary, supplemented, if need be, by ships taken up from trade.

- Military forces for **land operations** outside the NATO area would probably be drawn from 5 Airborne Brigade and 3 Commando Brigade Royal Marines. The wartime tasks of these units remain respectively those of home defence and the reinforcement of NATO's Northern Flank; but either or both could be deployed worldwide at short notice, by air, sea or a combination of the two. 5 Airborne Brigade can launch a parachute assault at battalion group strength from Hercules aircraft.

- The **Royal Air Force** provides support for all our overseas garrisons, some garrisons having RAF aircraft permanently stationed. If necessary these can be reinforced by air defence and offensive support aircraft which, with air-to-air refuelling, can deploy at short notice and over very long ranges. The Air Transport Force (ATF) provides routine support for the garrisons, deployments and overseas exercises; and in an emergency could be called on to re-deploy forces worldwide. By the end of 1988, all ATF aircraft will be equipped for air-to-air refuelling and will, therefore, be less dependent on staging airfields or overflying rights.

Exercises, Deployments and Training

- The regular programme of overseas deployments carried out by all three Services does more than simply provide much-needed training opportunities in a wide variety of testing, and often hostile, environments. It also enables the armed forces to add their own unique contribution to the achievements of more conventional diplomacy. This contribution takes many forms: goodwill visits by the Royal Navy; exercises with the armed forces of other countries; displays by teams such as the RAF Red Arrows; demonstrations in support of defence sales, and so on. Exercises and deployments overseas in 1986, and some of those planned for 1987, are described on page 35 . Exercise SAIF SAREEA, in particular, which was held last year in the Gulf, tested our capability to mount a strategic deployment rapidly by air and sea and provided an excellent opportunity to practise combined operations with a host nation.

Military Assistance Overseas

- A particularly popular, cost-effective and appreciated way of promoting stability and security in areas of the world important to Britain is by military assistance programmes designed to help friendly nations improve and maintain the effectiveness of their armed forces. We do not provide such assistance indiscriminately: as in the case of defence sales, there may be military or political difficulties, human rights issues or broader security considerations that argue against particular training commitments. But within these

constraints, and those of available resources, our programme is wide-ranging: in 1985-86 over 650 Servicemen were on loan service to countries outside NATO, and over 3,600 students from such countries attended military training courses in Britain.

International Peacekeeping

- We support the principle of deploying multinational forces, normally under United Nations auspices, to participate in peacekeeping operations; and we are happy for British troops to take part in such operations where they can make a useful contribution. At present we contribute to the Multinational Force and Observers in Sinai and the UN Forces in Cyprus. We also provide logistic support to the UN Forces in Cyprus, in Lebanon, and on the Golan heights from the SBAs in Cyprus.

6. Some have argued that Britain can no longer afford to maintain all its out-of-area commitments and should tailor them or withdraw completely. But, as Figure 10 shows, our overseas defence commitments are not expensive. Apart from the garrison in the Falkland Islands — the cost of which is expected to fall substantially over the next few years —the sums involved are very small in proportion to the benefits they bring. And in a period of tension or war in Europe the Servicemen and equipment concerned could be brought back for deployment within the NATO area or on home defence tasks.

7. We must, of course, be realistic about what — in political, military and economic terms — we can afford to do. And we must aim to use our defence resources as effectively as we can in support of our interests throughout the world. The modest proportion of those resources that we devote to out-of-area activities is well worth the dividends earned in terms of national security and standing, and the international stability on which our future well-being depends.

The Armed Forces

401. This chapter describes the contribution made by the three Services to the United Kingdom's four NATO roles outlined in Chapter 3. Each of these — the nuclear role, defence of the United Kingdom, of the European mainland and of the Eastern Atlantic and Channel — is complementary to the others, forming the 'Seamless Robe' of deterrence discussed in last year's Statement. And while each Service's contribution is distinctive, what is described below is the part that each plays in a team effort.

402. The Services are also, of course, part of the wider community, and this chapter outlines some of the ways in which their skills are used, directly or indirectly, to help the civilian population both at home and abroad.

THE ROYAL NAVY

403. The Royal Navy is responsible for the deployment of the United Kingdom's independent **strategic nuclear deterrent,** provided since 1969 by our force of four Polaris submarines. The force will continue to remain effective until it is replaced by Trident in the mid-1990s (see page 39).

404. The defence of Western Europe depends on NATO's ability to ensure the safe passage of seaborne reinforcements and supplies across the **Atlantic, Channel** and **North Sea**. NATO therefore maintains powerful maritime forces in the Eastern Atlantic and Channel areas — nearly 70% of which are provided by the Royal Navy — ready to deploy early against the Soviet Northern Fleet, if necessary before the arrival of US naval reinforcements. In wartime, the Royal Navy would undertake a variety of tasks in the area:

— the interception and containment of Soviet forces in the Norwegian Sea;

— direct defence of reinforcement, re-supply and economic shipping, in conjunction with US and European maritime forces and supported by the RAF;

— anti-submarine defence of the NATO Striking Fleet Atlantic; and

— protection and deployment of the combined United Kingdom/Netherlands Amphibious Force to reinforce the Northern Flank of NATO.

405. Defence of the **United Kingdom** is, of course, vital to those of us who live here. But the geographical location of these islands also makes them essential to NATO. The Royal Navy contributes to the defence of this country by mine countermeasures (MCM) and defensive mining of home waters, by contributing additional layers of air defence, and, as a consequence of forward deployment operations in the Norwegian Sea, by helping to prevent the threat of attack from the north.

406. Defence of the **Northern Region** is of crucial importance to the United Kingdom. 3 Commando Brigade Royal Marines would be available at a time of tension or war to reinforce Norway, the Baltic Approaches or the Atlantic islands, the Royal Navy providing the specialist amphibious shipping and support ships required for its deployment. In November the Government announced in the House of Commons that it had decided to retain an amphibious capability in the longer term. The assault ships, HMS *Fearless* and *Intrepid*, which could be used in support of such operations, will remain in service until the mid-1990s. Feasibility studies to examine the possibility of extending their lives have begun and, later this year, we intend to begin studies into the alternative possibility of building new vessels. We are also considering the means of providing helicopter lift, including the possibility of an aviation support ship. Further support is provided by our six Landing Ships Logistic, one of which, the replacement *Sir Galahad*, is planned to come into service later this year.

407. The Royal Naval and Royal Marines **Reserves** play an important role in reinforcing our regular forces, as well as providing maritime home defence by carrying out MCM tasks and defending key points, ports and anchorages against attack. The Royal Marines Reserves will also augment the UK/Netherlands Amphibious Force. We maintain a strong organisation for naval control of shipping, run largely by the Royal Naval Reserve and the Royal Naval Auxiliary Service (this year celebrating its Silver Jubilee), which would be activated in a time of tension to assist the safe passage of allied merchant shipping both around the United Kingdom and worldwide.

408. The Navy's current strength is described at Annex B. Recent additions to its equipment programme are set out in Table 2. Because of the increasing size and capability of the Soviet submarine fleet, we place particular emphasis on our anti-submarine warfare (ASW) capability. Nuclear weapon systems deployed by the Royal Navy include nuclear depth-bombs for ASW, which can be carried by shipborne helicopters; and free-fall nuclear bombs, which can be delivered by carrier-launched Sea Harriers. We plan to increase the proportion of nuclear-powered vessels in our submarine force within broadly constant numbers overall. The diesel-electric submarines in service will consist of the new powerful and quiet Upholder class, four of which are now on order. The updating of our

Table 1 Major Equipment Ordered Since 1979

Royal Navy [1]

Submarines

Trident Submarine	1
Nuclear-Powered Fleet Submarines	5
Type 2400 Diesel-Electric Submarines	4

Frigates

Type 22	8
Type 23	4

MCMVs

Hunt Class	8
River Class	12
Sandown Class (SRMH)	1

Patrol Craft

Falkland Islands Patrol Vessel	3 [4]
Offshore Patrol Vessels	2 [4]
Hong Kong Patrol Craft	5 [4]

Auxiliaries

Seabed Operations Vessel	1 [4]
Auxiliary Oiler Replenishment Vessel	1 [4]
Aviation Training Ship	1 [4 6]
Coastal Survey Vessel	1
Landing Ship Logistic	1 [4]

Naval Aircraft

Sea Harrier FRS1	23
Sea King Mk 5	13
Sea King AEW	8 [5]
Sea King Mk 4	21
Lynx Mk 2/3	10

Army

Tanks

Challenger Regiments	7
120mm Ammunition	Full operational stocks [2]

Armoured Personnel Carriers

Warrior Battalions	13
Saxon Battalions	10

Logistic Vehicles

14 Tonne Load Carrier	1045 [4]
6x6 Recovery Vehicle	340 [4]

Helicopters

Lynx (armed with TOW)	25 (final batch) [4]
Thermal Imager for TOW Sight	Full front-line fleet [2]

Field Artillery

MLRS Regiments	3
BATES	1 system

Air Defence Batteries

Rapier Field Standard B2	3
Tracked Rapier	4
Rapier 2000	2
Javelin Launchers	14 [7]
Starstreak High Velocity Missile	3

Infantry Weapons

SA80 Small Arms System	175,000
51mm Mortar	2,400
LAW 80	Full operational stocks [2]

Other Equipment

Wavell ADP System	1 system [4]
Ptarmigan Digital Communications	1 system [4]
Full-Width Attack Mine Fuze	Initial deployment [2 4]
Challenger ARRV	Initial deployment
Phoenix Remotely-Piloted Vehicle	3 Troops
General Service Respirator S10	Initial deployment [2 4]

RAF [1]

Strike/Attack

Tornado GR1	82

Offensive Support

Harrier GR5	62 [3]

Air Defence

Tornado ADV	162
Phantom F-4J	15
Boeing E-3A	6

Transport/Tankers

VC10	9 [5]
Tristar	9
Chinook Helicopter	8

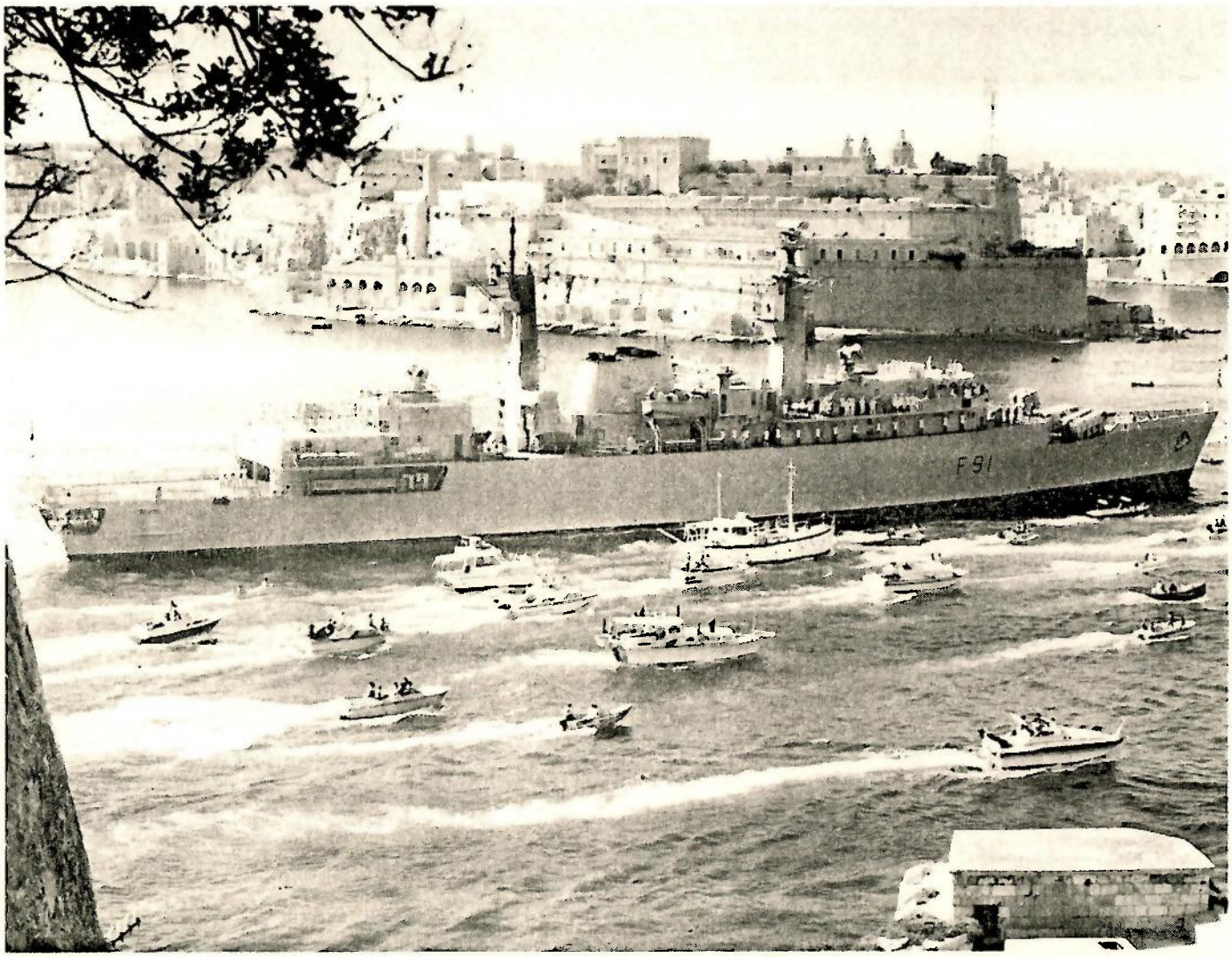
Basic Trainer

Tucano	130

Notes:

1. Platforms only.
2. Numbers not given for reasons of security.
3. Includes two prototypes.
4. This Table has been compiled on a revised basis compared with previous Statements, and these equipments, ordered prior to 1986-87, are now included for the first time. For the same reason the following equipments, which appeared in last year's Table, have now been excluded — Coastal Training Craft, Harrier T4, Jetstream Mk 2/3, Skynet Communications Satellites, Milan Night Sight, BAe 146 and HS 125.
5. Conversions of existing aircraft.
6. Purchase and conversion of second-hand ships.
7. Includes Territorial Army.

surface escort fleet is also continuing. Six Type 22 frigates are currently under construction, and orders have been placed for the first four of the new Type 23 ASW frigates: the first of class is planned to come into service around 1990. In last year's Statement we reported that the feasibility study for the NATO frigate replacement was completed. Negotiations for the next stage, project definition, are now under way. This ship, which in the British variant would have an anti-air warfare bias, could eventually replace our Type 42 destroyers. Last year we also ordered the first of the new Auxiliary Oiler Replenishment Vessels (AOR), and we are currently negotiating an order for the second. The AOR will need to be able to operate far from the main body of the Fleet, supporting towed-array vessels, and will be equipped with weapon systems to defend herself and the valuable cargo that she will carry. She will also provide helicopter maintenance facilities. The collaborative Anglo-Italian EH 101 programme to develop a new ASW helicopter is proceeding, and the first prototype should fly shortly; an initial order of 50 aircraft is envisaged.



HMS *Brazen* entering Grand Harbour, Valetta

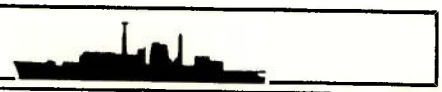
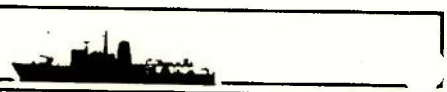
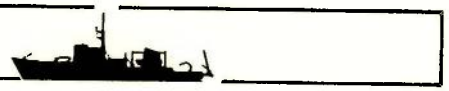
Merchant Shipping

1. Defence needs in time of war cannot just be met from the resources maintained by the armed forces in peacetime. The British merchant fleet will be essential for the transport of reinforcements to the regions of Allied Command Europe and across the North Atlantic, and for certain specialised tasks in support of the Royal Navy. The merchant fleets of our allies also have an essential part to play in the common defence.

2. Together with the Department of Transport, the Ministry of Defence is monitoring the availability of merchant shipping to meet the various needs of the armed forces. Over the last decade there has been a very substantial reduction in the number of ships on the United Kingdom register, and British shipowners are continuing to sell vessels or transfer them to dependent territory and foreign registers. This does not mean the ships are lost for defence purposes. The Government already has the power in time of tension or war to requisition ships on dependent territory as well as United Kingdom registers — a power used quickly and effectively at the time of the Falklands conflict in 1982 — and it would be possible by legislation to extend this power to ships on foreign registers which are beneficially owned by British operators.

3. The number of available merchant vessels on the United Kingdom and dependent territory registers in the categories required to meet the needs of the armed forces is shown in Volume 2, Table 1.3. In general, these needs are well covered, except in the case of trawlers suitable for mine countermeasures

Table 2 Royal Navy Equipment

	Numbers brought into service 1986-87	Numbers ordered 1986-87	
Submarines			
Trident Submarines	—	1	
Nuclear-powered Fleet Submarines	1	—	
Frigates			
Type 22	1	—	
Type 23	—	3	
MCMVs			
Hunt Class	1	—	
River Class	2	—	
Auxiliaries			
Auxiliary Oiler Replenishment Vessel	—	1	
Survey Vessels			
Coastal Survey Vessel	—		
Naval Aircraft			
Sea King Mk 4	9	—	
Sea King Mk 5	2	—	
Jetstream T Mk 3	4	—	

Other Naval equipment ordered in 1986-87

TPHSI 2	Development and initial production of Command System for Submarines
Sonar 2050	In-board electronics for hull-mounted sonar for ships
Close-in Weapons Systems	Further order of 7 Phalanx and 9 Goalkeeper Systems
Sonar 2054	Development and production of Sonar fit for Trident SSBN

purposes. Studies of other ways of meeting that requirement have shown that the task could be undertaken by suitably modified off-shore support vessels. As the shape and size of the merchant fleet continue to change, other plans may also need to be adjusted.

4. The previous paragraph relates only to the merchant shipping that is of direct concern to the Ministry of Defence: the shipping required by our armed forces for European reinforcement and operational support of the Royal Navy. In time of war, NATO nations would pool merchant ships not needed for national defence or coastal shipping purposes, and vessels required for transatlantic reinforcement and civil supply would be drawn from this pool. Because of concern about the possible effect of the decline of NATO's merchant fleets on such requirements, the Government has taken the initiative in pressing for a NATO-wide study to be made of the Alliance's ability to meet its needs for merchant shipping in time of emergency or war. NATO is considering this proposal.

5. The Government has also addressed the need for adequate trained and experienced crews to man the merchant ships required in crisis and war. We have announced our intention of contributing towards training and travel costs for British seafarers, thus encouraging the retention of British nationals on board British vessels; and of establishing a Merchant Navy Reserve to provide a pool of experienced seafarers in time of need. These proposals are being worked out in consultation with shipowners' and seamen's representatives. Parliament will be asked to grant any necessary powers. We continue to monitor the position and will take any further measures that may be necessary to ensure that the needs of the armed forces can be met.

THE ARMY

409. The centre-piece of the Army's contribution to NATO is its role in Europe's **Central Region.** Our land and air forces there demonstrate our positive commitment to the security of Europe and are the embodiment of the concept that the forward defence of the Federal Republic of Germany is the forward defence of the United Kingdom itself. The British Army of the Rhine (BAOR) consists of elements of a major combat force, 1 (BR) Corps, together with its logistic support. Its peacetime establishment of 55,000, planned to increase to 56,000 by the end of the decade, includes three armoured division headquarters, seven armoured brigades, an air-mobile brigade and substantial corps troops. On mobilisation, numbers would rapidly be expanded to over 150,000 by the movement of 2nd Infantry Division headquarters, two Regular infantry brigades and two Territorial Army (TA) infantry brigades from the United Kingdom to the Federal Republic, together with a number of smaller units and individual regular and reservist personnel. In the Federal Republic the Army deploys one regiment of Lance surface-to-surface missiles and five regiments of artillery capable of firing nuclear warheads supplied by the United States.

The Warrior Mechanised Infantry Combat Vehicle

410. Together with corps from Belgium, the Netherlands and the Federal Republic of Germany, 1 (BR) Corps forms NATO's Northern Army Group (NORTHAG), which is responsible for the defence of the northern half of the Federal Republic from Cologne to the Elbe; within that area 1 (BR) Corps has been allocated a 65km stretch of front. The NATO appointment of Commander NORTHAG is filled by the Commander-in-Chief BAOR. NORTHAG's plans and concepts of operations were revised during 1985, as outlined in last year's Statement.

411. We provide an infantry battalion, an armoured reconnaissance squadron and artillery, engineer, helicopter and logistic support for the Allied Command Europe Mobile Force (Land), which is available to SACEUR for deployment on either the **Northern** or **Southern Flanks** of NATO. Additionally, the United Kingdom Mobile Force (UKMF) is currently earmarked for rapid deployment in tension or war to the Baltic Approaches, where it would reinforce either Denmark or Schleswig-Holstein.

412. The Army provides the majority of the 100,000 ground forces available for the defence of the **United Kingdom,** including Regular, TA and reservist units. Their responsibilities include the protection from sabotage or attack of vital installations and bases.

413. As foreshadowed in last year's Statement, the second phase of the Territorial Army's expansion is now under way, with the formation of five of the six planned infantry battalions, three of which have home defence roles; two more Royal Engineer airfield damage repair squadrons, and an Army Air Corps squadron equipped with the Scout utility helicopter, also in home defence roles; and other supporting units. Recruiting for the Home Service Force, which is an integral part of the TA raised specifically for the home defence role, continues to go well. Planning is also under way to assign specific wartime roles to an additional 35,000 Regular Army reservists, in both the United Kingdom and BAOR. The reservists would either be assigned to reinforce existing units or formed into General Service Units, each of about company strength.

414. The Army's commitment to countering the terrorist threat in **Northern Ireland** in support of the Royal Ulster Constabulary (RUC) remains undiminished, the other

Table 3 Army Equipment

	Numbers brought into service 1986-87	Numbers ordered 1986-87	
Tanks			
Challenger	1 regiment	1 regiment	
Night Observation and Gunnery Sight	3 regiments equivalent	—	
Armoured Personnel Carriers			
Saxon	3 battalions	—	
Helicopters			
Lynx Mk 7	6	—	
Thermal Imager for TOW Sight	—	Front line fleet (1)	
Air Defence			
Rapier Field Standard B2	—	1 battery	
Rapier 2000	—	2 batteries	
Tracked Rapier	1 battery	—	
High Velocity Missiles	—	3 batteries	
Infantry Weapons			
LAW 80 (Light Anti-Armour Weapon)	—	Full operational stocks (2)	
SA80	6 battalions	—	
SA80 Night Sight and 3rd Generation Image Intensifier Tubes	—	Initial quantities of night sight	
Surveillance			
Hand-held Thermal Imagers (Spyglass)	Initial deployment (2)	—	
Observers Thermal Imaging System	Initial deployment (2)	—	
Nuclear, Biological and Chemical Defence			
General Service Respirator S10	Initial deployment (2)	—	
Chemical Agent Monitor	Initial deployment (2)	—	

Notes

(1) Ordered in 1985-86 but too late for inclusion in the 1986 Statement

(2) Numbers not given for reasons of security

two Services continuing to provide support as required. Since the Services became actively involved in Northern Ireland in 1969 the nature of the task has changed, and the level of violence, which peaked in 1972, has declined considerably. This is reflected by the drop in the numbers of Regular Army personnel present in the Province, from a peak of some 22,000 in the early 1970s to the current level of just over 10,000 (including ten Regular infantry battalions). Further steps have been taken to improve the professionalism and capability of the Ulster Defence Regiment (UDR), whose 6,500 personnel make a substantial contribution to the high level of support for the RUC that the Army still provides. Sadly, the cost in human lives remains high. 12 soldiers, including eight members of the UDR, were killed in 1986, bringing the total since 1969 to 545. Another 55 were injured. The dedication and bravery of all the members of the armed forces in the face of this toll of human lives is demonstrated by the fact that, during 1986, 120 gallantry awards were made, including three Military Medals, two George Medals and 17 Queen's Gallantry Medals.

415. The Army's current strength is given at Annex C. Recent additions to its equipment programme are set out in Table 3. Most significant for BAOR are the introduction of the Saxon armoured personnel carrier and the ordering of a seventh regiment of Challenger tanks. In addition, the new Warrior mechanised infantry combat vehicle (MICV) will enter service shortly. The re-mechanisation of 6 (Airmobile) Brigade will begin in 1988 and when completed will significantly enhance the anti-armour capability of 1 (BR) Corps. The brigade will eventually consist of one Challenger-equipped armoured regiment and two infantry battalions mounted in Warrior MICVs, and will constitute a fully capable mechanised formation, able to make an important contribution to the defence of the NORTHAG area. A third air defence regiment will also be formed, equipped with the new Starstreak high velocity missile, for which orders have recently been placed. Contracts have also been placed for the new DROPS logistic vehicle fleet and for the Rapier 2000 anti-aircraft missile system. Among the new equipments coming into service are the new SA 80 infantry weapons, the S10 respirator and a range of battlefield thermal imager systems.

The Royal Engineers

1. 1987 is the 200th anniversary of the granting of the Royal Charter to the Royal Engineers, and is therefore an appropriate year to remember their contribution to the support of the armed forces and civil authorities.

2. The Sapper trains as a combat engineer, tradesman and infantry soldier. In war, Sappers provide combat engineering and construction skills. Their tasks include: preparation of the battlefield using explosive and other means, including minefields; demolition of bridges and roads to hinder the enemy's mobility; and bridging and other mobility support to enable the armoured formations of 1 (BR) Corps to move and fight. The Sappers also support the RAF Harrier force in the Federal Republic of Germany, as well as providing the airfield damage repair capability on RAF airfields in both the Federal Republic and the United Kingdom.

3. The ability to meet the construction role is particularly well illustrated by recent work in Northern Ireland. Last year we reported that the Royal Engineers had begun assisting the Royal Ulster Constabulary (RUC) with urgent building work, in particular re-building RUC stations. In the face of persistent intimidation of contractors in the Province, the need for this help remains, and work began in February on re-building another two RUC stations.

4. The Royal Engineers have a special responsibility for bomb disposal (see paragraph 425). Even now, some 42 years after the end of hostilities, they are required to deal with many Second World War bombs. Closely related to the clearance of explosives is the Sapper responsibility for searching for terrorist devices; this has grown into a highly developed science in the last decade.

5. Sappers also carry out long- and short-term engineering projects at home and abroad. During 1986, the Royal Engineers deployed on duty to some 33 countries. They are, for example, currently involved in construction tasks in Canada, Kenya, Norway and Zimbabwe. They have also, in the past year, helped with flood relief work in the United Kingdom and disaster relief in the Solomon Islands and El Salvador (see paragraph 427).

THE ROYAL AIR FORCE

416. The Royal Air Force supports all pillars of British defence policy: it makes a significant contribution to SACEUR's theatre nuclear force for deterrence in Europe; it has primary responsibility for the air defence of the United Kingdom; it maintains a powerful tactical air force in the Federal Republic of Germany; it provides units for the early reinforcement of the Northern Region; and it fulfils major maritime tasks in the Eastern Atlantic and Channel. The RAF also provides air-lift support for all three Services. The capabilities of our aircraft give the United Kingdom the strategic reach and tactical flexibility to meet unforeseen tasks, whether deployment of combat squadrons using air-to-air refuelling to distant locations (as was recently demonstrated with UK-based Tornados in exercise SAIF SAREEA in the Oman — see paragraph 422) or support for our existing overseas bases and garrisons.

417. On the **Central Front,** RAF Germany forms part of an integrated allied group of forces, the Second Allied Tactical Air Force (2 ATAF), whose area of responsibility includes that of NORTHAG. Like NORTHAG, 2 ATAF is commanded by a British officer, who is also Commander-in-Chief RAF Germany. The RAF provides air defence forces for the security of allied airspace in peace and for the defence of territory and our forces in war, a requirement discharged by two Phantom squadrons, which form an important part of the allied all-weather fighter force in the Federal Republic, and by Rapier air defence squadrons.

418. The tasks of NATO's air forces include combating any Warsaw Pact air offensive against our ground forces and other military and civilian targets. Both Phantom and Tornado aircraft would be involved in this role as part of the general allied air effort. It would also be necessary from the outset to be able to attack armoured units that

EXERCISES

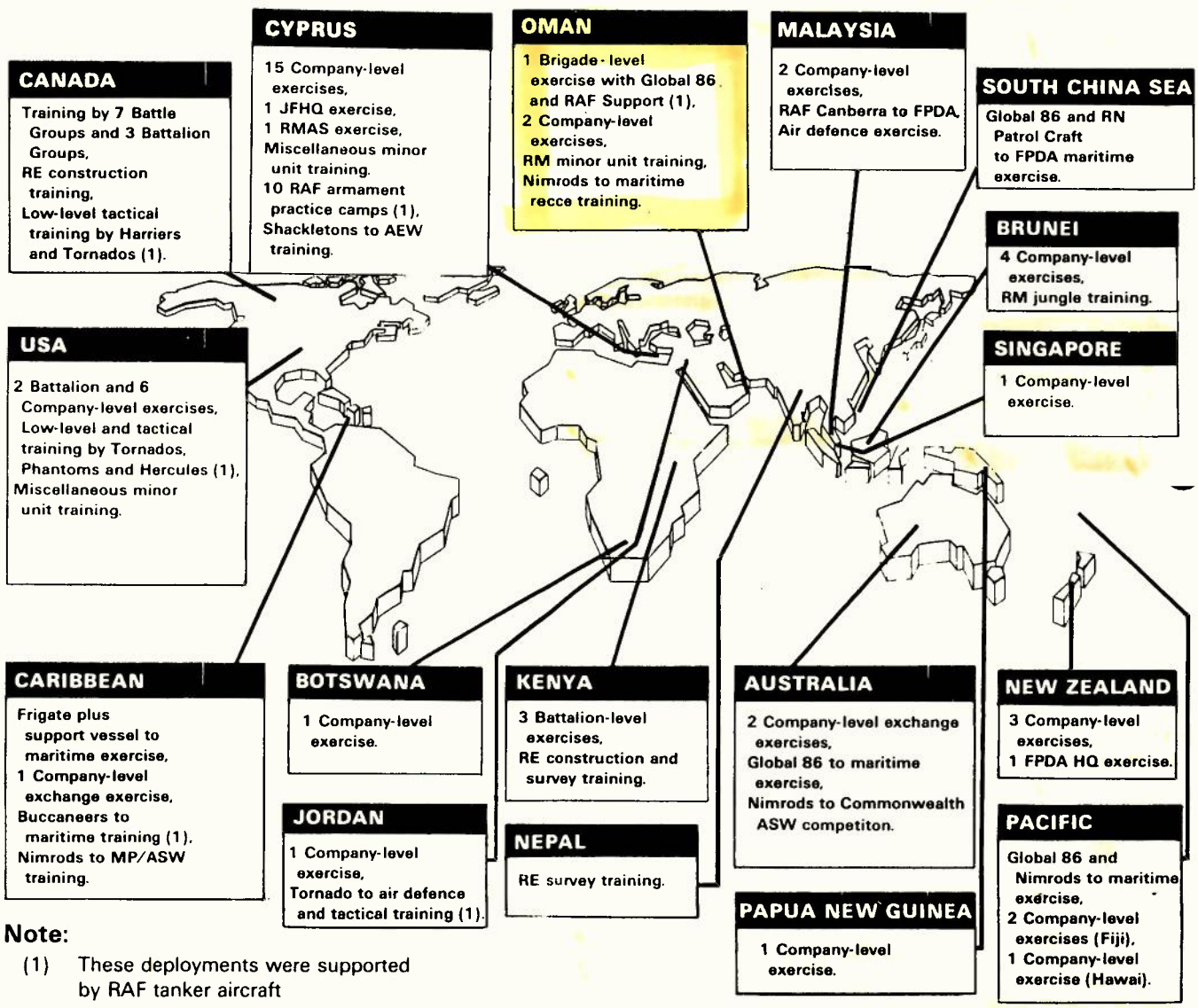
422. During 1986, the armed forces again undertook an extensive and varied programme of collective training, both with our allies and with other friendly countries. Major exercises are shown in Table 5. Exercises conducted outside the NATO area are illustrated in Figure 5. Some of the year's highlights were as follows:

— **HILEX 12**, a biennial command post exercise, held in March 1986, to test and develop the Alliance's arrangements for consultation and collective decision-making in a crisis. The opportunity to practise plans and procedures at lower levels was also taken. Our participation extended down to Command Headquarters in both the United Kingdom and the Federal Republic of Germany.

— **NORTHERN WEDDING**, a maritime exercise in the Atlantic and Norwegian Sea in August and September involving ships, aircraft and amphibious forces from ten countries, including France. Its purpose was to test and improve NATO's ability to counter the possible threat to reinforcement and re-supply operations in the North Atlantic. Some 150 naval vessels together with many merchant ships and 400 military aircraft took part. Our contribution included 37 ships, led by HMS *Ark Royal*, and the Royal Marines component of the United Kingdom/Netherlands Amphibious Force together with RAF Buccaneer, Hawk, Lightning, Nimrod and Phantom aircraft. In all, some 35,000 personnel were involved.

— **BOLD GUARD**, a combined field training exercise, which took place in Jutland and Schleswig-Holstein in September and October, and involved Danish, Dutch, German and US as well as British units. The major part of our commitment consisted of 12,000 men of the UKMF, with RAF Chinook and Puma helicopters. Harrier and Jaguar squadrons were deployed for offensive air tasks in their reinforcement roles. The United Kingdom/Netherlands Amphibious Force deployed from participation in NORTHERN WEDDING to form the amphibious element of the opposing forces for the exercise.

Figure 5 Exercises outside Europe in 1986



Note:

(1) These deployments were supported by RAF tanker aircraft

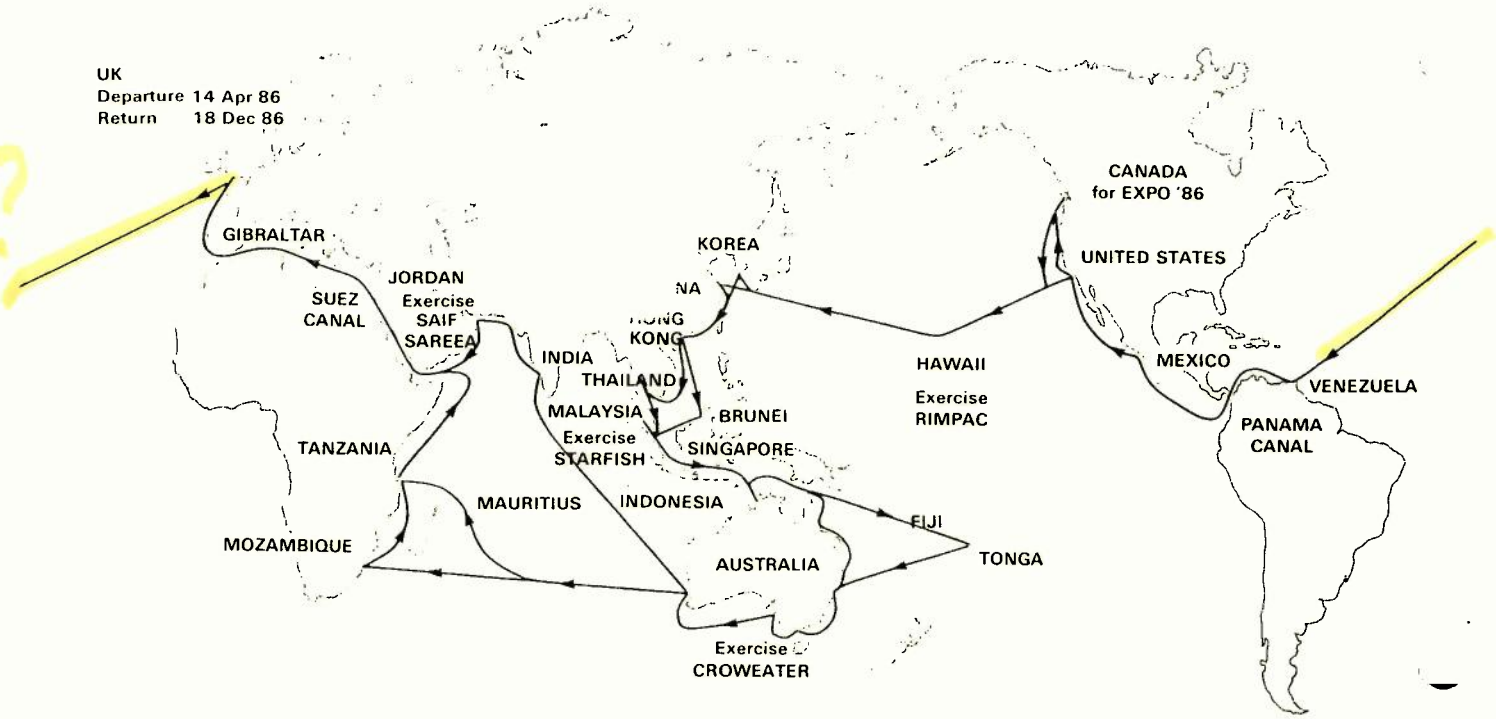
Table 5 Major Exercises in 1986

Name	Date	Type	Location	Service	Other Countries
HILEX 12	March	Command Post	NATO-wide	Tri-Service	NATO
GREEN FLAG	March-April	Tactical Flying	US	RAF	United States
ELDER FOREST	April	Air Defence	UK	RAF/RN	
MAPLE FLAG	April	Tactical Flying	Canada	RAF	
TORCHLIGHT	April	Home Defence Study Period	UK	Tri-Service Civilian Agencies	
WESTERN VORTEX	April-October	Tactical Flying	Canada	RAF	
RIMPAC	May-June	Anti-Submarine Warfare	Pacific	RN/RAF	United States, Australia, Canada, Japan
VOLANT RODEO	May-June	Flying and Support Competition	United States	RAF	United States, Australia, Brazil, Canada, Federal Republic of Germany,Italy, Portugal
JOLLY ROGER	June	Submarine/Anti-Submarine Warfare Training	Atlantic	RN/RAF	Portugal, Canada, Spain, France
COPPER FLAG	July	Tactical Flying	United States	RAF	United States
STARFISH	August	FPDA Maritime Exercise	Off Malaysia	RN	Australia, New Zealand, Malaysia, Singapore
TACTICAL FIGHTER MEET	August	Tactical Flying and Air Defence	UK	RAF	Belgium, Canada, Denmark, Federal Republic of Germany, Netherlands, United States, France
NORTHERN WEDDING	August-September	Maritime	Atlantic/ Norwegian Sea	RN/RAF	Belgium, Canada, Denmark, France, Federal Republic of Germany, Netherlands, Norway, Portugal, United States
BOLD GUARD	September-October	Field Training	Jutland/ Schleswig-Holstein	Tri-Service	Denmark, United States, Federal Republic of Germany, Netherlands
AUTUMN TRAIN	October	Maritime	Eastern Atlantic	RN/RAF	France, Portugal, United States
CROWEATER	October	Maritime	Pacific	RN	Australia, United States, Canada
ETERNAL TRIANGLE	October	Field Training	Germany	Army	
KIWI CONNECTION	October	FPDA Land Exercise	New Zealand	Army	Australia, New Zealand, Malaysia, Singapore
PRIORY	October	Air Defence	UK	RAF/RN	
VENDETTA	October	Submarine Training	Norwegian Sea	RN	Norway, Federal Republic of Germany
RED FLAG	October-November	Tactical Flying	USA	RAF	United States
SAIF SAREEA (SWIFT SWORD)	November	Field Training	Oman	Tri-Service	Oman
FINCASTLE	November-December	ASW Competition	Australia	RAF	Australia, New Zealand, Canada.

— **SAIF SAREEA** (SWIFT SWORD), the largest exercise to date in a programme designed to develop our ability to respond rapidly to a crisis anywhere in the world. A Joint Force Headquarters deployed to Oman in November with a tri-Service force of some 4,750 personnel consisting of elements of 3 Commando Brigade embarked in HMS *Intrepid* and 5 Airborne Brigade, with support from RAF air transport aircraft. Six Tornados deployed non-stop from the United Kingdom using air-to-air refuelling and were in operation within 35 minutes of landing. On arrival, the UK-based force joined HMS *Illustrious* and major elements of the Royal Navy Task Group (see page 36), the Gulf patrol ships and the Sultan of Oman's armed forces for a combined field training exercise.

423. The programme for 1987 includes a further major exercise with an out-of-area scenario, PURPLE WARRIOR, which will be staged in south-west Scotland this November. In September, the major NATO exercise, OCEAN SAFARI, will take place in the Atlantic. 11 Alliance nations will participate in manoeuvres designed to improve and demonstrate our collective ability to counter the potential threat to maritime reinforcement and re-supply operations between North America and Europe. Our own national reinforcement plans will be practised in October, when the BAOR divisional exercise, KEYSTONE, will involve the UK-based 2nd Infantry Division. As part of the exercise, some 24,000 Regular and Territorial Army personnel, with their support vehicles, will deploy to their wartime area of operations in BAOR.

Figure 6 GLOBAL 86: RN Task Group Deployment



GLOBAL 86

1. **GLOBAL 86** was the first circumnavigation of the world by a Royal Navy Task Group for ten years. The Group, consisting of the aircraft carrier HMS *Illustrious* and a number of warships and Royal Fleet Auxiliaries,left British waters in April 1986 on an eight-month deployment (although *Illustrious'* departure was delayed by a fire on board, she joined the Group in Singapore). In a full programme, the Group exercised with friendly navies, sailed 42,000 miles and visited 21 countries in North America, the Far East, Australasia and the Indian Ocean. One day in each port was set aside exclusively for promoting British defence equipment.

2. Highlights of the programme included Royal Navy participation for the first time in the major US Navy exercise, RIMPAC 86, in the Pacific, together with the navies of Canada, Australia and Japan; the first RN visit to China since 1980; attendance at the Sydney Fleet Review for the 75th anniversary of The Royal Australian Navy; and involvement in SAIF SAREEA (see paragraph 422). An unexpected feature of the deployment was the interest shown by foreign navies in our methods, organisation for both ships' operations and administration, and in the whole area of achieving value for money and economy of manpower. Figure 6 traces the passage of this deployment, showing the ports visited and the main exercises undertaken.

THE SERVICES AND THE COMMUNITY

424. The armed forces have a unique and varied contribution to make to the life of the community, from search and rescue around our coasts to disaster relief overseas. There is also a less obvious contribution made by the large number of Servicemen who return each year to civilian life equipped with the skills acquired during their military training (see below).

Bomb Disposal

425. The courageous specialist work of the Explosive Ordnance Disposal (EOD) teams of the Royal Army Ordnance Corps and Royal Engineers, together with those of the Royal Navy and the RAF, has continued with great success. During the year they responded to 629 calls and neutralised 4,292kg of explosive in Northern Ireland; and answered some 4,387 requests for help in Great Britain. Of the latter 471 were suspected terrorist bombs, including 21 devices, 13 explosions, 16 finds, 103 hoaxes and 318 false alarms. A further 3,916 conventional munitions of First and Second World War vintage, including torpedoes, bombs, mines, depth charges, other warheads and small arms ammunition, were also disposed of successfully. In addition, the Services provide training in bomb disposal and search techniques for the police and for overseas students. The job requires persistence as well as skill. After some 22 years' clearance work at Orfordness, an area that was extensively used between 1914 and the late 1950s as a bombing range, the RAF EOD team has finally vacated its permanent establishment at the site.

Search and Rescue

426. Last year helicopters of the Royal Navy and the RAF, assisted where necessary by Nimrod Maritime Reconnaissance aircraft, were called out on 1,319 occasions, resulting in 797 rescues. Their skill and dedication are illustrated by the incident, in November 1986, when Sea King helicopters from RAF Brawdy lifted 28 people from the iron ore carrier *Kowloon Bridge* off the southern coast of Ireland within two hours of a midnight distress call, in a force 11 gale, with 20 foot waves. In addition, the services of the RAF Mountain Rescue Teams (MRTs) have also been required on 73 occasions. 14 people were rescued by the MRTs in the past year.

Disaster Relief

427. Members of all three Services were involved in disaster relief operations in 1986 and early 1987:

- in the **Solomon Islands,** a detachment from the Royal Corps of Signals spent several weeks restoring communications and assessing damage caused by Cyclone Namu in May. They were followed by a team from the Queen's Gurkha Engineers who carried out a survey of bridges lost or damaged by the cyclone, and subsequently supervised the construction of two Bailey bridges;

- assistance was provided to the **Jamaican** authorities following the disastrous floods in June. A company of the 2nd Battalion, the Parachute Regiment took part, as well as troops and RAF Puma helicopters from the Belize garrison and HMS *Ariadne*, the West Indies guardship;

Service Training and the British Economy

1. The opportunities offered by the Services for training and education are substantial; the number of branches, trades and employment groups runs into many hundreds. From the moment recruits enter the Services, their training is designed to build self-discipline and the ability to work as a member of a team. These qualities form the foundation on which later training in trade skills and the exercise of responsibility are based.

2. Each year some 15,000 Servicemen and women complete their engagements in the Services' major skill or trade groups and become available for civilian employment. Over a third will have been employed in mechanical, electrical or civil engineering trades; the remainder will have served in a wide variety of occupations — such as transport, communications, catering, accounting, personnel management and medical and dental trades — with obvious applications to the civilian sector. During their military service not only will they have had experience of exercising their skills in a disciplined environment, but most will have received formal training leading to the award of a qualification or certificate granted or recognised by the appropriate civilian institute or examining body. Many of these Servicemen and women will have had no vocational qualifications on entry.

3. Training in the armed forces is undertaken specifically to meet the Services' needs; but wherever possible it is aligned with the requirements of civilian examining bodies. Trainees can gain qualifications ranging from degrees and membership of professional bodies to Heavy Goods Vehicle driving licences. For example, about 100 post-graduate degrees, 100 medical and dental degrees and 400 other first degrees are obtained each year under Service sponsorship. The first degree training of engineering officers from all three Services takes place at the Royal Naval Engineering College at Manadon and the Royal Military College of Science at Shrivenham. Both colleges also offer MSc engineering courses, and the Royal Naval College at Greenwich provides a unique degree in nuclear technology for both the Navy and industry. At a lower level, some 12,000 craft and technical certificates and diplomas are awarded each year under Service sponsorship.

4. In addition to normal military training, the Services also offer other categories of training. Most serving personnel with over five years service attend a resettlement course of up to 28 days duration, to prepare them for a second career on leaving the Service. Some 11,000 Service personnel attend these courses each year. The Armed Services Youth Training Scheme provides training in skills and trades for the young unemployed, including driving, clerical work, storekeeping, vehicle mechanics and telecommunications. Adults can take advantage of the training available in the Territorial Army, Royal Naval Reserve and Royal Air Force Reserve units, where communication and leadership skills particularly can be developed.

— elements of the Belize garrison also contributed to relief operations in **El Salvador** following the earthquake in October;

— in the **United Kingdom**, troops were deployed with heavy equipment following a train crash in Humberside and to assist after flooding in Yorkshire and Pembroke. During the severe winter weather in January, some 1,400 soldiers (including members of the TA) and over 400 vehicles were employed in helping to rescue stranded motorists, clear snow-bound roads, move supplies to isolated areas and provide technical assistance;

— all three Services made a major contribution, in cooperation with the Belgian armed forces and civilian rescue services, and assisted by ships of the Royal Netherlands and Federal German navies, to the rescue of passengers from the *Herald of Free Enterprise*, which capsized outside Zeebrugge harbour on 6 March 1987. 26 Royal Navy divers were deployed from the United Kingdom by RN and RAF helicopters and aircraft, and from HMS *Hurworth* at Ostend, within hours of the disaster. RAF Sea King helicopters flew with thermal imaging equipment over the hull to detect survivors, while a team of Army chaplains helped administer to the needs of survivors and relatives.

Trident — Costs and Benefits

1. The latest estimate for the Trident programme is £9,265 million. This is £546 million less in real terms than the estimate announced in March last year, and £738 million less than the original estimate of £7,500 million announced in 1982, over and above the savings resulting from the decision to process missiles at King's Bay,Georgia. The reduction in the estimate compared with last year is caused by continuing refinement of costs as the definition of the project improves.

2. The estimate amounts to under 6% of the current equipment budget over the procurement period. At its peak the programme will account for less than 11% of this budget. We have committed £3,000 million to the programme so far and have actually spent £1,000 million. 70% of the expenditure already committed will be spent in this country, and the United Kingdom's slice of the total programme is expected to be about 62%; this arises both from the fact that components will be manufactured in this country, and from British industry's access to US prime contractors.

3. What does all this mean in practical terms for British industry? The number of British firms in direct contact with one or more of the seven US sub-system prime contractors is now over 340. About 300 firms have been approved as bidders to the programme, and nearly 200 of them have been invited to bid for contracts on the US Trident II programme. Some 230 contracts have been placed with British firms; some of these are follow-on orders to initial awards made during the earlier advanced development phase; many are small in value but offer considerable potential over the remaining life of the programme. The total value of contracts awarded to British industry is more than $50 million.

4. All this is good news for jobs. We estimate that the Trident programme will sustain an average of 7,500 direct and 6,000 indirect jobs in this country throughout its procurement period — at its peak 27,000 people will be working, directly or indirectly, on Trident. Up to 2,500 construction workers will be needed for the development of the Clyde Submarine Base, and the construction of the first submarine, HMS *Vanguard*, is likely to provide employment for about 4,000 people at the shipyard in Barrow and 5,000 elsewhere.

5. The Trident programme itself is now well advanced. The keel for HMS *Vanguard* was laid last September, and construction is progressing satisfactorily. The contract for the second submarine will be placed this year. Contracts have now been placed for the development and initial production of many of the complex equipments that form the Tactical Weapon System. Work is also proceeding apace on construction of the supporting infrastructure at the Clyde Submarine Base.

6. Advance works at RNAD Coulport to provide a network of depot roads, excavate the sites of key buildings and provide perimeter security are well in hand, preparatory to the main task of expanding the depot, which will begin later this year. At Faslane, site preparation and some re-development are also under way, and work will start shortly on a ship-lift and associated facilities providing power supplies, workshop and office accommodation. To improve access to the Clyde Submarine Base, and relieve local communities of additional traffic, several new roads are under construction. At a recent series of public meetings held at Faslane, local residents and others were told of the progress being made, of the problems that have been overcome, and of plans for the future.

The Minimum Deterrent

1. By the mid-1990s, the Polaris strategic deterrent force will be almost 30 years old. The submarines will be nearing the end of their hull life, and the ship systems and sensors will have been modified and modernised virtually to the limits. The ability of the boats to patrol undetected will be less certain in the light of improved Soviet anti-submarine warfare (ASW) techniques, and the ability of the missiles themselves to penetrate strengthened Soviet anti-ballistic missile (ABM) defences will be less assured than it is today.

2. These are the hard facts that the Government had to face soon after taking office in 1979. Because of the long lead-times involved in the procurement of major weapon systems, an early decision was needed if Britain was to maintain a credible strategic nuclear deterrent after the end of Polaris' useful life. In 1980, the then Defence Secretary announced the Government's intention of buying the Trident missile system from the United States.

Why a British independent deterrent?

3. The public debate that has followed has ranged far wider than discussion about particular weapon systems and into the fundamental question of whether or not this country should remain a major nuclear power. The Government's reasons for believing it to be essential that we do so have been set out in full in previous Statements but, in view of the misunderstandings surrounding the subject, bear repeating here.

4. We judge that the existence of independent European strategic deterrents — both British and French — significantly reduces the risk of a Soviet attack, whether conventional or nuclear, on us or our NATO allies. As we explain on page 13, deterrence, and preventing war, is a matter of ensuring that the risks involved in starting a war are seen by a potential aggressor to be far greater than any possible gains he could hope to achieve. Although the mainstay of the Atlantic Alliance's deterrent forces is provided by the United States, the presence of an independent nuclear deterrent under absolute British control greatly complicates the calculations that would have to be made by anyone contemplating an attack on Britain or our allies, and helps make aggression an unacceptably risky option. Although the integrity and vital importance of the US commitment to Europe are not in doubt, if Soviet leaders were at some stage tempted to calculate, for whatever reason, that they could impose their will on Western Europe by military force, without becoming involved in strategic war with the United States, they would still have to take account of British nuclear forces.

5. Those who argue that the money we are spending on modernising our nuclear deterrent would be better devoted to strengthening our conventional forces must answer the following question: would British and Alliance defence capabilities, and hence the effectiveness of deterrence, be enhanced more by an invulnerable second strike submarine-launched ballistic missile force; or by a proportional enhancement of our conventional forces? The answer is clear. In the first place, as we discuss on page 13, conventional forces by themselves — no matter how strong — could not provide an effective deterrent. Moreover, even if the total cost of the Trident programme were devoted to conventional defence, it would only enable us to maintain little more than one armoured division with 300 tanks in total. But as Annex A shows, the Warsaw Pact already outnumbers NATO in tanks by some 30,000. So we would in practice be exchanging the unique contribution to deterrence made by our independent nuclear forces for a marginal reduction in the conventional superiority enjoyed by the Warsaw Pact. The Government sees no benefits in this for anyone except a potential enemy.

Why Trident?

6. This, in brief, is the rationale for Britain's maintaining an independent nuclear deterrent into the next century. But why should we be so convinced that Trident is the best system to do the job? It is worth reminding ourselves of the basic facts. First, the purchase agreement for Trident is an extension of that concluded in 1963 for the purchase of Polaris: we shall be buying from the United States the Trident D5 ballistic missiles and related equipment, together with continuing spares supply and maintenance support; but the warheads will be built in this country, as will the submarines themselves. Secondly, like Polaris, the Trident force will consist of four boats, each capable of carrying 16 missiles.

7. When the Government considered the various options for the system to succeed Polaris, the requirement was very clear: it had both to fulfil our minimum force deterrence criteria; and to be affordable. It had therefore to be capable of posing a credible threat to key aspects of Soviet state power; and of posing such a threat at all times. In other words, it had to maintain our ability to inflict, if necessary, an unacceptable level of damage on those targets likely to be most valued by Soviet leaders. Secondly, Soviet leaders had to be convinced that, notwithstanding defensive or other measures, our weapons would survive any pre-emptive attack and would reach their target. And thirdly, the system had to be capable of meeting these requirements throughout its

A Polaris submarine returns from patrol

service life in the face of technical changes and advances in the defensive systems that it would have to penetrate.

8. These requirements are more demanding now than when we embarked on the Polaris programme. To begin with, since the late 1960s when our Polaris entered service, the Soviet Union has deployed the only operational ABM system in service anywhere in the world and is currently modernising and expanding it up to the 100 launchers around Moscow allowed by the ABM treaty. This means that, if the Soviet Union is to be denied any possible sanctuary from which to prosecute aggression without fear of direct reprisal, we shall need to carry more

warheads in the future to pose the same threat as in the early days of Polaris. And secondly, as noted earlier, Soviet ASW techniques have significantly improved over the last 20 years and will continue to do so.

9. Measured against these requirements Trident will represent no more than a minimum deterrent. As with Polaris, four boats are the minimum needed to guarantee one on patrol at all times. The increased payload of D5 offers the best prospect of being able to penetrate Soviet ABM defences in the face of possible improvements during the lifetime of the system. And the increased range of the D5 missile will give the submarines the necessary extra sea-room in which to conceal themselves as Soviet ASW techniques improve.

10. Some have argued that the British Government is planning an excessive increase in the number of warheads compared with Polaris, at a time when the superpowers are discussing 50% reductions in their strategic arsenals. In fact, we have made clear that each British Trident boat will carry no more than a maximum of 128 warheads — far less than the full capacity of D5; this represents an increase of up to 2½ times the payload of the Polaris boats, when they entered service in the 1960s each carrying 48 warheads. That is the order of capability necessary in our judgement to keep the deterrent effective and credible.

11. Trident's multiple independently-targetable warheads enable it to strike more targets than Polaris; but this is not a key factor from the point of view of providing an effective British deterrent. The essential capability for us is to be able to continue to hold at risk key aspects of Soviet state power, not to threaten the maximum possible number of individual targets. Our Trident forces will deploy with the minimum number of warheads consistent with this requirement. Even after the 50% decreases in superpower arsenals discussed at Reykjavik, Trident would represent a smaller proportion of Soviet strategic warheads than did Polaris in 1970.

12. Trident also meets the criterion of affordability. No major defence capability can be acquired cheaply; but, especially by comparison with major conventional programmes, we believe that Trident offers exceptional value for money. The costs and benefits of the Trident programme are addressed separately on page 38.

Why not an alternative?

13. The Government is fully committed to the Trident programme — a commitment that stems from a rational assessment of Britain's defence needs in the world of the 1990s and beyond, as well as from the belief that no other system would meet those needs as cost-effectively. But others have different views. Constructive ideas on an issue as important as guaranteeing the security of our country are to be welcomed. The problem is that all of the alternatives that have been proposed were examined before we took the decision to buy Trident and were found to have major drawbacks — drawbacks that we believe rule them out as serious options:

- **A wholly British-built deterrent force:** British industry has not had a major capability to build strategic missiles since the 1960s, and to have tried to re-establish this capability would have taken longer than the time available. It would also have involved major uncertainties; and would without doubt have been very expensive. The United States had been our tried and tested partner in this field for some 20 years, and given that — as with Polaris — the operational independence of Trident would be unimpaired, the Government recognised the potentially great financial advantage to be derived from maximum cooperation and commonality with the United States.

- **Sea-launched cruise missiles:** Cruise missiles certainly have an important military value. Given their particular operational characteristics, they can be a very useful addition to an armoury that, as in the United States, has a range of strategic systems or, as in Europe, is part of a range of forces linking the conventional military option to the last-resort strategic strike force. But when judged against the criteria that the British strategic deterrent has to meet, cruise missiles simply do not fit the bill.

  In the first place, they have serious operational shortcomings. Developments in stealth technology notwithstanding, the missiles are likely to become much more vulnerable to the Soviet Union's increasingly sophisticated air defences over the next two decades. This country could not afford to keep updating and modernising its force to take account of Soviet technological advances. Moreover, current cruise missiles have far less range than ballistic missiles; this means that a Trident submarine will have approximately 15 times more sea-room in which to conceal itself than would a boat with cruise missiles. And cruise missiles have to be fired within 500 miles of land or else they become inaccurate. This further limits the ocean space available.

  The other main objection flows from these operational considerations: it is one of cost. Although cruise missiles on a one-

for-one basis are cheaper than their ballistic counterparts and are actually more accurate, each cruise missile has only one warhead, compared with the multiple warheads on each Trident ballistic missile. This, combined with the operational problems, means that we would need many more cruise than ballistic missiles to be sure of achieving the striking power necessary for an effective deterrent. More importantly, more missiles means more submarines; and submarines are the most costly component of any sea-launched system. We assess that it would take 11 submarines, each capable of carrying 80 cruise missiles, to produce the equivalent deterrent power to that of a force of four submarines, each with 16 Trident ballistic missiles. To make a cruise missile force as effective as one based on ballistic missiles would, therefore, in broad terms involve double the expenditure both of capital and of running costs.

- **Air-launched cruise missiles:** Air-launched cruise missiles share the operational drawbacks of their sea-launched counterparts; this means that, compared with ballistic missiles, many more would be needed to meet our deterrence criteria. Given the large numbers involved, additional airfields and support facilities would be necessary to base the launch aircraft; and to maintain existing aircraft in their vital conventional roles, it is almost certain that considerable numbers of new, dedicated nuclear-delivery aircraft would have to be bought.

  Another major drawback concerns the pre-launch survivability of aircraft and supporting airfields; these would be much more vulnerable than submerged submarines. Protective measures, such as the construction of hardened aircraft shelters, could offset the danger to an extent but would also add significantly to costs. Alternatively, continuous aircraft patrols could ensure that the force would not be caught on the ground; but these would be extremely expensive, in terms both of resources and manpower. And to have RAF nuclear-armed aircraft on permanent patrol in and around British airspace would probably be unacceptable to most people in this country.

  A deterrent force based on air-launched cruise missiles would, as with the sea-based force, probably cost about twice as much as Trident.

- **An Anglo-French deterrent:** If one were considering a fully integrated, jointly controlled Anglo-French nuclear deterrent, significant problems would arise. Our two countries would need to agree on the criteria the force would have to meet, the targets that would be put at risk, the details of complementary refits and patrol cycles and, by no means least, the process of consultation leading to the launch of a nuclear weapon and the authority for the actual firing of a weapon. And if a jointly controlled force were contemplated, which country would change its defence philosophy? For certainly there would have to be a change. British nuclear forces are committed to NATO, and the Alliance would unquestionably be weakened in military and political terms if they were removed. France, on the other hand, although a member of the Alliance, is not part of the NATO military structure, and her forces are therefore independent of the Alliance.

- **Trident Submarines with French missiles:** Could we then simply buy French rather than American missiles? There was no missile in the French armoury in 1979 that would have met our deterrence needs. Information has since been published on the proposed new-generation French missile, the ballistic submarine-launched M5, which suggests that it might meet some of our requirements. But this is only now about to begin development, whereas Trident's development is already well under way. There must therefore be some doubt whether the M5 would be available to us within the same time-scale as Trident. More significantly, the switch to a different missile would entail a substantial re-design of the submarine, associated systems and the missile warhead. This would inevitably lead to several years' delay in deployment of the replacement system and to very considerable additional costs.

14. All this leads to the conclusion that, for the United Kingdom, the only real policy options remain either to have a credible strategic deterrent that we can afford — in other words Trident — or to have none. The worst course would be to opt for some kind of half-way house that not only used up valuable resources but, at the end of the day, represented in Soviet eyes — ultimately the only eyes that really matter — no real deterrent at all.

Chapter Five

Equipping The Armed Forces

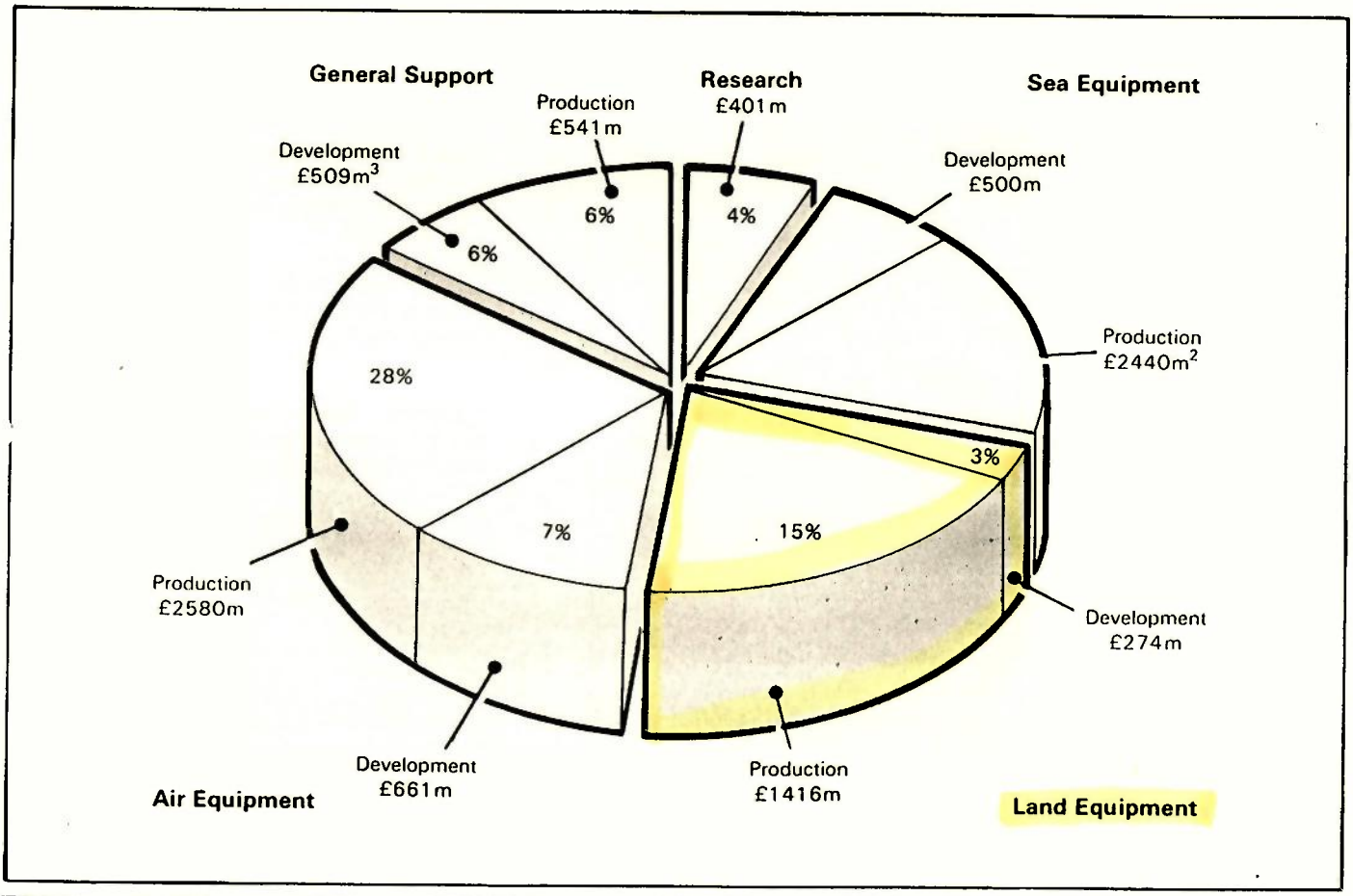
PROCUREMENT POLICY

501. The ability of our armed forces to fulfil the roles outlined in Chapter 4 and on page 22 depends to a large extent on the quality and quantity of their equipment. It is the task of the Procurement Executive (PE) of the Ministry of Defence to provide them with this equipment on time, in the quantities they need, to the standard required to meet the threat they face on the battlefield, and at the keenest price. The resources that we are investing in equipment are considerable: in 1987-88 we propose to spend £8,539 million, representing 45.5% of the total defence budget.

502. The Ministry of Defence is the largest customer of British industry. Clearly, with its purchasing power, the PE must pursue policies that will not only secure the best value for money but also promote the efficiency and long-term health of our defence industrial base. This means being:

— **A demanding customer:** our standards are high but not unnecessarily so: our negotiations, and in particular pricing, must be keen but fair. By satisfying the Ministry of Defence, British industry should be well placed to satisfy the requirements of other customers worldwide.

Figure 7 The Main Divisions of the Procurement Programme 1987-88[1]



Notes

[1] Figures relate to expenditure at Estimates Prices and are net of Appropriations-in-Aid. Development expenditure has been amended to reflect the decision to purchase AWACS in place of Nimrod AEW.

[2] Including the cost of equipment for dockyard services.

[3] Including the cost of some HQ staff who are responsible for both research and development.

— **An informed customer:** our requirements must be clearly defined and expressed in terms that encourage cost-effective responses and enable export potential to be taken fully into account.

— **A 'hands off' customer:** our contractors should bear the full responsibility for the successful completion of their contracts, while keeping the Ministry informed of progress as necessary. Carrying risk, they should have the opportunity for reward if they are successful and efficient in delivering to time, cost and specification.

We seek a relationship of trust and mutual understanding with our suppliers, but the language of that relationship is thoroughly commercial.

503. We expect final figures to show that in 1986-87 we sustained the welcome improvement of recent years and achieved a level of competition significantly higher than that pertaining before the initiative to put greater emphasis on competition was taken — although the level of achievement each year is dependent on the nature of the defence industry and of the orders to be placed. 1986-87 saw real successes in competition and some examples are given below. Furthermore, the proportion by value of contracts let on the basis of cost plus a percentage profit arrangement declined from 15% in 1983-84 to less than 10% in 1985-86. This trend has continued, and in the last year no new major development contract has been placed on that basis.

New Measures

504. We are pressing ahead in our drive for better value for money. In the past year we have worked on a number of new measures:

— With competition a cornerstone of our policy, it is important that industry should understand clearly how we apply it. We have therefore published guidelines setting out our approach.

— We have also published a code of practice to ensure that contractors carry forward our emphasis on competition to the sub-contract level.

— We have now launched a fortnightly, self-financing, *MOD Contracts Bulletin,* giving details of opportunities to compete for business at both prime- and sub-contract level. This includes details of Ministry of Defence orders estimated to cost over £0.5 million, as well as a supplement showing opportunities for British firms in the US Strategic Defence Initiative (SDI).

— We have revised our practices on the interim financing of contracts to provide a further incentive towards timely and satisfactory performance by linking payments more closely to achievement. Guidelines on this have been published.

— Flexibility in carrying forward unspent provision from one year to the next allows project managers greater freedom to manage their programmes efficiently. The need for this flexibility has been increased by our new approach to interim payments, under which we aim to pay against milestones achieved and not simply because time has elapsed. We previously had scope to carry forward underspend of up to 5% of the provision for procurement expenditure. With the agreement of the Treasury, we can now carry forward up to an additional £400 million a year. This additional flexibility is for a three-year period.

— Studies of spares procurement have identified a number of factors leading, on occasion, to higher prices than are necessary. In particular, improved management techniques should enable us to operate a more economic ordering pattern and so achieve substantial savings.

— As a further aid to cost-consciousness we plan to label items in Service stores with their price.

Successes In Procurement

The following are some examples of the benefits gained from competition in procurement during the last year:

- The winning bid in a competition for a multiplexer system was only about 75% of the estimated price. In addition, the winning company's equipment offers a number of technical advantages that will lead to cost savings elsewhere.
- Recent competitions for sonobuoys produced savings of up to 30% on the prices previously paid under single-source procurement arrangements.
- A competition for the repair and overhaul of Pegasus engines produced savings in real terms of about one third on prices previously paid.
- In a competition for training missiles, the winning tenderer's price was nearly 50% lower than the last non-competitive price.
- A competition for torpedo warheads led to our placing a contract with the previous non-competitive supplier at a price some 16% lower than that initially estimated.
- Although we reluctantly had to cancel the Nimrod Airborne Early Warning contracts (see paragaraph 508), the introduction of competition into the project led to our being offered much better terms than would otherwise have been available. The subsequent request for best and final offers, and some tough negotiating, led to a reduction in price of a further 12% and better contract terms.

Small Firms Initiative

1. We launched this initiative in November 1986, as part of our continuing effort to encourage this enterprising sector of British industry to compete for our business. One of our first steps had been the publication in 1983 of the booklet *Selling to the MOD*. After distributing 45,000 copies of the first edition, we published a revised and expanded version in 1986, of which some 15,000 copies have since been distributed. We have now taken this further by setting up a Small Firms Advice Division, whose remit is to:

- collaborate in the operation of our Small Firms Research Initiative, whereby businesses with flexibility and a readiness to innovate will be able to bid for an additional £1 million of our research and development funds. And, as opportunities occur, representatives of small firms will be appointed to the boards of our research establishments;
- provide guidance and advice to small firms on our various contractual, financial and quality assurance procedures so that they can plan and submit bids more easily. In addition to meeting them individually, we shall hold a series of conferences for them during 1987;
- reinforce an informed and receptive attitude towards small firms among Ministry staff, especially our local purchase officers in each command and establishment, who will have a particularly important role in encouraging small businesses to tender for Ministry work.

2. Within only two months of the establishment of the Small Firms Advice Division more than 300 companies, the great majority new to the Ministry of Defence, had been in touch with it.

Organisation, Staffing and Information

505. Policies are important, but defence procurement is a complex undertaking requiring a high degree of professionalism and motivation. We must organise our staff efficiently and provide them with the training and commercial skills that they need if our policies are to succeed. Similarly, we must ensure that industry is aware of our aims. To these ends initiatives taken over the past year include:

— **A new emphasis on training:** measures have been taken to ensure that project managers acquire the necessary skills by experience or appropriate training.

— **Improving our professionalism as customers,** by developing a better understanding of the financial environment in which our suppliers operate and of their wider corporate objectives and performance, through, for example, improving our contacts with the City.

— **Improving our commercial skills,** by extending the exchange of personnel between the PE and industry. This enables our staff to gain first-hand experience of working in a commercial environment, and brings commercially-minded people from industry into the mainstream of the Department's activities. There are now over 200 interchanges a year, more than double the number of two years ago.

— **Preparing a booklet outlining the organisation and aims of the PE** to complement existing publications such as *Selling to the MOD* and *Value for Money in Defence Procurement.*

— **Improving management information in the PE.** Information Technology has a key role to play in helping us to monitor and control PE programmes, and we are expanding the use we make of it significantly. One example is the TOPMAST management information system, which gives higher management swift access to information on major contracts and major contractors.

Quality Assurance

506. The responsibility for supplying defence equipment of the specified quality rests with the contractor. A constant preoccupation of the project manager in the Ministry of Defence is to ensure that the right quality for the equipment he is procuring is clearly specified. He is supported in this role by the staff of the Directorate General of Defence Quality Assurance, who are deployed in project management teams, in industry itself and in well-equipped workshops and laboratories. Their work involves advising on the quality aspects of contracts, including removing ambiguities from specifications to be given to contractors, identifying opportunities for the use of standard components, assuring the project manager that contractors are technically competent and have adequate quality control and, if necessary, assisting in the resolution of technical problems.

507. These tasks are now being performed against the background of the Ministry's policy on competition, which has increasingly encouraged small firms and firms not traditionally engaged in defence work to demonstrate their abilities. Fears have been expressed that quality may suffer as competing firms seek to reduce costs. But one of the merits of competition is that it helps to improve quality. And we shall maintain the very high standards we require of contractors. The pursuit of quality within the general context of value for money, and a proper emphasis on life-cycle — rather than just initial procurement — costs, have never been so important.

Airborne Early Warning

508. The decision to cancel the Nimrod Airborne Early Warning project and to adopt instead the Boeing E-3A aircraft as the replacement for the Royal Air Force's obsolescent Shackleton aircraft was the most significant procurement decision of the year. The Government has no doubt that it took the right decision, for reasons explained at the time and widely accepted. The outcome holds lessons for all concerned. It underlined the need for many of the improvements in our procurement procedures that were already in hand and are described above and, in particular, the need to agree, at the earliest possible stage, contractual terms that place the contractor under effective discipline, with clear specifications and acceptance criteria.

Table 6 Estimated Programme Costs of Major Equipments Entering Full Development in 1986-87

Project	Estimated Total Development & Production Costs (1986-87 prices)
Starstreak High Velocity Missile	£235 million [1]
Command System For Submarines	£87 million [1]

Notes:
1 Initial production only
2 Table 3.2 of Volume 2 gives details of in-Service dates and costs of major equipment projects.

Table 7 Illustrative Unit Costs of Defence Equipment

Equipment	Unit Cost (1986-87 prices) (excluding development costs)
Trafalgar Class Submarine	£235 million
VC10 Tanker	£14.6 million
Medium-sized Satellite Communications Terminal	£3.0 million
Diesel Generating Set for a Major Warship	£300,000
Doppler Navigation Equipment	£38,000
Radar Altimeter	£10,000
Improved Kinetic Energy Round for Chieftain/Challenger	£850
Emergency Life Support Apparatus for Ships and Submarines	£99

EQUIPMENT COLLABORATION

509. The drive to achieve greater collaboration with our NATO allies in the development and production of equipment continues to play an essential part in our efforts to make more effective use of the resources available for defence. Neither we nor our allies can afford to dissipate scarce resources by unnecessarily duplicating development of the same equipment. We would now expect to develop and produce most significant new equipments in collaboration with allies unless there are pressing reasons not to do so — and provided, of course, we get value for money.

510. The impetus towards greater collaboration within Europe in particular comes from the conviction, shared by our partners, that a more cohesive European effort will strengthen the Alliance in a number of important ways: **politically,** by demonstrating our ability to work closely together; **militarily,** by reducing the inefficiency that comes from having different and incompatible versions of the same equipment on the battlefield; and **industrially,** by helping to produce a more competitive European industrial base.

British, German and Italian pilots and navigators train together at RAF Cottesmore on the collaboratively-produced Tornado aircraft

511. The main multilateral forum for European defence equipment collaboration is the Independent European Programme Group (IEPG) (see also paragraph 308). Defence Ministers in the IEPG have stressed that we must improve on the *ad hoc* arrangements under which collaborative projects have been generated in the past. Good progress continues to be made in developing a more systematic approach, including in particular:

— **Harmonisation of requirements:** a further eight European Staff Targets have been agreed in the last year, making 13 in all in the last two and a half years. Close attention has been paid to integrating the Staff Targets with the NATO Conceptual Military Framework (see Chapter 3). Discussions among interested nations are now proceeding, and we hope that they will lead to collaborative projects to meet the Staff Targets so far agreed.

— **Collaborative Research:** a number of cooperative technology projects are under discussion. The IEPG is also focusing attention on Technology Demonstrator Programmes, the aim being to validate new technologies by using full-scale engineering models to prove ideas outside the laboratory and thus reduce the risks involved in any future development.

— **Improving competitiveness:** the Study Team appointed by IEPG Ministers to make proposals for improving the competitiveness of the European defence industry reported in December 1986. The team has made far-reaching recommendations to remove obstacles to greater free trade and industrial cooperation within Europe and to achieve greater coordination of European defence research. Its report will be addressed by IEPG Ministers in June 1987.

512. These efforts to improve European collaboration are not an alternative to transatlantic cooperation: they form part of Europe's efforts to make a more effective contribution to the Alliance. In addition, equipment collaboration within NATO has itself received fresh impetus from the Nunn Amendment to the US FY 86 Defense Authorisation Act, which set aside funds from

the US Defence budget for collaborative research and development. And the European members have been able to play a constructive part, in the NATO Conference of National Armament Directors (CNAD), in exploiting the opportunity offered by that legislation. CNAD is also continuing to work on enhancing standardization and interoperability of equipment in NATO. Although attracting less public attention than major equipment projects, this work is vitally important in ensuring that, should hostilities occur, each national force committed to NATO could obtain supplies and support services from others. For example, a study nearing completion is designed to ensure that ground equipment at airfields can service aircraft from other nations.

513. This work to improve the environment for collaboration is producing results, as is indicated by Table 8, which lists collaborative projects in service or at various stages of development or study. This includes ten projects initiated since the last such listing, published in the 1985 Statement, five of which (indicated) have benefited from Nunn Amendment funds.

More Capable and Reliable Equipment

1. Today's military equipment is frequently more expensive, item for item, than yesterday's. But it is also more capable. Modern technology, skilfully handled, allows us to increase the combat effectiveness of an individual piece of equipment, sometimes many times over.

2. For example, one particularly effective raid during the Second World War involved 560 Lancasters dropping 1,795 tons of bombs. Given the accuracy of modern weapons systems, if we were planning that raid today we would need only 12 Tornados to drop about 48 tons of explosive to have the same effect. Some 3,900 aircrew flew the Lancasters, while only 24 would be needed to fly the Tornados.

3. If we are to obtain the best return from our modern equipment, we must ensure that it is ready to hand and working when it is needed. We must aim to achieve high reliability and good maintainability. There have been important advances in this field in recent years. For example, in 1979 a destroyer or frigate spent 27% of its life, on average, in refit. In 1985 the comparable figure was 16%.

4. The more reliable our equipment, the fewer the Servicemen who need to be diverted from the teeth to the tail to support it. The lower the maintenance bill, the greater the resources that can be devoted to the front line. So high reliability and maintainability have an important contribution to make to our search for better value for money in defence procurement. Achieving them requires good design from the outset, together with taut procedures for translating that design into demonstrably reliable production equipment.

5. We are therefore looking into how we can better achieve these aims, through further improvements in our procurement practices. The rewards should be significant — to give a current example, new high-pressure turbine blades planned for Tornado engines are expected to achieve nearly double the life of turbines of the current production standard for an increase of only 20-30% in production costs.

Table 8 Collaborative Projects Involving The United Kingdom

Project	Participating Countries [1]
In production or in service	
Naval Equipment:	
Sea Gnat Decoy System	DE/UK/US
Ikara Anti-Submarine Weapon [2]	AUS/UK
Barra Sonobuoys [2]	AUS/UK
Paris Sonar	FR/NL/UK
Land Equipment:	
FH70 Howitzer	GE/IT/UK
M483A1 Artillery Shell	NL/UK/US
Scorpion Reconnaisance Vehicle	BE/UK
Multiple-Launch Rocket System Phase 1	FR/GE/IT/UK/US
Missiles:	
Martel Air-to-Surface	FR/UK
Sidewinder Air-to-Air	GE/IT/NO/UK/US
Milan Anti-Tank	FR/GE/UK
Air Systems:	
Jaguar	FR/UK
Lynx, Puma, Gazelle	FR/UK
Tornado	GE/IT/UK
Harrier AV8B/GR5	UK/US
Other Equipment:	
Midge Drone	CA/GE/UK
In development or earlier study phases	
Naval Equipment:	
NATO Frigate Replacement (NFR90)	CA/FR/GE/IT/NL/SP/UK/US
Ships Low-Cost Inertial Navigation System	CA/NL/SP/UK
Advanced Sea Mine [3]	UK/US
Land Equipment:	
COBRA (Counter Battery Radar)	FR/GE/UK
Multiple-Launch Rocket System Phase III	FR/GE/UK/US
Missiles:	
Short-Range Anti-Radiation Missile	BE/CA/GE/IT/NL/UK/US
Long-Range Stand-Off Missile	GE/UK/US
TRIGAT (Third Generation Anti-Tank Guided Weapon)	FR/GE/UK
Advanced Short-Range Air-to-Air Missile	GE/NO/UK
Milan Improvements	FR/GE/UK
Air Systems:	
Airborne Radar Demonstrator System [3]	FR/UK/US
European Fighter Aircraft	GE/IT/SP/UK
Naval ASW Helicopter (EH 101)	IT/UK
A129 Light Attack Helicopter	NL/IT/SP/UK
RTM 322 Helicopter Engine	FR/UK
Other Equipment:	
NATO Identification System [3]	BE/CA/DE/FR/GE/IT/SP/TU/UK/US
Ada Computer Language Project Support Environment [3]	BE/CA/FR/GE/IT/NL/NO/SP/UK/US
Multifunctional Information Distribution System [3]	BE/CA/IT/FR/GE/NL/NO/UK/US
Midge Post-Design Services	FR/GE/UK

Notes:
1 AUS=Australia; BE=Belgium; CA=Canada; DE=Denmark; FR=France; GE=Federal Republic of Germany; IT=Italy; NL=Netherlands; NO=Norway; SP=Spain; TU=Turkey
2 Excluded from list in 1985, which was confined to projects in NATO.
3 US share of these projects includes Nunn Amendment funding.
4 Collaborative work on SP70, which was listed in 1985, has been discontinued.

DEFENCE RESEARCH

514. In 1987-88 we plan to spend some £401 million on defence research, representing about 2% of defence spending as a whole. This research is aimed at producing an underlying basis of scientific and technical expertise for application to the selection, development, production and operation of weapon systems and equipments.

515. The planning and management of the defence research programme has been stream-lined to establish more formal links between the research establishments and the main customers for research and project support in the Ministry of Defence and other Government departments. The aim is to focus attention sharply on priorities and end products and thus ensure that scarce resources of money and scientific manpower are concentrated on areas where the need is greatest and the prospects of a return most promising.

516. Over the last year, notable achievements at the defence research establishments include:

— The **Royal Aircraft Establishment, Farnborough,** with Pilkington Space Technology Division, was granted the Queen's Award for Technological Achievement in recognition of work on the development of cover glasses for satellite solar cells;

— Research at the **Chemical Defence Establishment, Porton Down,** on chemical detection has led to the development of a Chemical Agent Monitor using ion mobility spectrometry — a device that, besides its primary military role, has potential for use in industry for detection of hazardous gases and explosives;

— Two scientists from the **Royal Signals and Radar Establishment, Malvern,** and two scientists of the English Electric Valve Company, were presented with a Rank Prize Funds Award for 1986 in recognition of their work on the development of infra-red camera-tube technology. Thermal cameras using these tubes are used by firefighters in 15 countries to 'see' through smoke and locate hidden obstacles and victims.

517. In addition to their primary defence function, the research establishments cooperate with other Government departments, academic institutions and industry in research activities that serve both defence and wider aims. Ministry of Defence support for the universities has recently been enhanced by our participation with the Department of Education and Science and the Research Councils in funding joint research grants. We are also seeking to widen the scope of joint programmes with the universities and Research Councils and to promote the common use of facilities and staff exchanges.

518. Last year's Statement described the launch of Defence Technology Enterprises Ltd (DTE) to promote civil spin-off from defence research and development (R & D). DTE is now operational at four major establishments; there are already some 500 items on DTE's data-base judged to have potential for exploitation, and the company has recruited some 170 companies as associate members. 15 specific licences for exploitation of innovative technology from the research establishments have been successfully concluded, or are in the final stages of negotiation.

519. Collaboration with the private sector in the research field is being further strengthened through, for example, the National Electronics Research Initiatives, under which the Department is undertaking collaborative work in electronics at the Royal Signals and Radar Establishment with the Department of Trade & Industry and private industry. The Ministry of Defence will also contribute to the *Link* programme, which was announced by the Prime Minister last year. *Link* is directed at Departments with R & D programmes, and is designed to 'pull through' scientific and technological advances from scientific research into marketable products and services. We also participated in Techmart, an exhibition of technology transfer at the National Exhibition Centre last November.

520. We plan to sign a contract with the Farnborough Aerospace Development Corporation for the development of 50 acres of land on the southern perimeter of Royal Aircraft Establishment for business aviation and high technology industry.

The Defence Research and Development Base

521. The roles and capabilities that we require our armed forces to have are many and various — more so than those of any of our NATO allies, other than the United States. It is not surprising, therefore, that expenditure on R & D has consistently been a significant element within the defence programme to ensure that in future, as at present, the Services have equipment relevant to, and adequate for, the tasks they must be ready to discharge should circumstances so require.

522. This background to the high proportion of total Government R & D arising on defence account is not always understood; but the Government shares the underlying concern of those who fear that necessary investment in defence R & D may crowd out valuable investment in the civil sector. Thus, while defence R & D has contributed to the advance of technology, Britain's resources of qualified scientists and engineers, and the skilled manpower supporting them, are not inexhaustible. Although there is much that we can do and are doing, as described above, to harness our defence R & D effort to benefit the wider civil economy, defence and civil work are in competition for the same skills, and it would be regrettable if defence work became such an irresistible magnet for the manpower available that industry's ability to compete in the international market for civil high technology products became seriously impaired.

523. Accordingly, we shall in future be paying careful attention to this factor in making our procurement choices, giving special emphasis to avoiding duplication of successful equipment developments already achieved by our allies. Our policies of increasing competition in procurement, and encouraging greater international collaboration to meet the equipment needs of the Alliance, are already aimed at ensuring more effective use of Britain's R & D resources. We shall also be encouraging

our suppliers to think more broadly about the relationship between their defence and civil markets, and we shall be very willing to join with them in identifying any changes in our defence procurement processes, consistent with defence requirements and the achievement of value for money, that would make it easier for them to achieve success in the latter as well as the former.

Defence Exports

1. The United Kingdom has long been one of the free world's leading exporters of defence equipment. By any standards, however, 1986 saw some spectacular achievements. It began with the conclusion of our biggest ever overseas order: the purchase of the collaboratively-developed Tornado aircraft and other equipment by Saudi Arabia. This deal will be worth at least £5 billion over the next few years, and most contracts for it have now been signed. Building on this achievement, we expect the total of new contracts signed in 1986 to reach £5 billion; this will represent an increase of more than 70% over the £2.9 billion figure for 1985 — itself some £600 million higher than in the previous year. Such orders continue to maintain a large number of jobs in the United Kingdom and have raised our share of the world market to nearly 9%.

2. Many of our most significant defence export successes have come in what is probably the most competitive market of all, the United States. The continuing achievements of British exporters there are illustrated by the fact that the balance of defence trade between our two countries has improved from a ratio of 4:1 in favour of the United States in 1978 to just under 2:1 in recent years.

3. An important factor in British industry's success overseas has been the continuing efforts of the Defence Export Services Organisation (DESO) and the support given by staff of the PE. In a field in which our international competitors are very active, the DESO helps to ensure that British firms are given the assistance they need. Among other activities in 1986, the DESO again organised the British Army Equipment Exhibition at Aldershot and participated in the Farnborough Air Show, which is sponsored by the Society of British Aerospace Companies. Both of these events, as well as the Royal Navy Equipment Exhibition, which is to be held in September this year, clearly demonstrate the breadth of the advanced capability of British defence manufacturers. PE staff were particularly successful in promoting the sale of two Skynet 4 satellites in 1986. We believe that British defence manufacturers should be given continued support in their efforts, subject to appropriate export controls, to ensure that they can continue to supply our own Services with competitively-priced equipment.

BRITISH PARTICIPATION IN THE SDI RESEARCH PROGRAMME

524. Last year's Statement outlined the arrangements for British participation in the US SDI research programme, including the signature of the bilateral US/UK Memorandum of Understanding and the establishment of the SDI Participation Office (SDIPO) in the Ministry of Defence.

525. The SDIPO provides the focus within Government for promoting a full British involvement in the SDI research programme. Participation on a substantial scale will bring both direct benefits and an understanding of the programme's technical implications for future defence systems. The activities of the SDIPO include: management of a comprehensive technical information exchange on a government-to-government basis; and the provision of wide-ranging assistance to British companies and research institutions in their efforts to secure SDI research contracts. During 1986 the SDIPO was strengthened by the appointment of an Industrial Support Director and a number of industrial consultants, all experienced men coming from British companies to the SDIPO on loan for between one and two years.

526. By the end of 1986 a total of $34 million of SDI research work had been awarded to the United Kingdom, involving some 36 British companies and academic institutions. This was an encouraging start to the first year of British participation. A total of some 400 British companies, and about 100 academic bodies, are now registered as interested in seeking SDI research business. Of the awards made in 1986 the largest was the European Architecture Study: announced in June 1986 and worth approximately $10 million, this study, which is scheduled to continue through to May 1988, involves five separate research establishments and 16 different companies. It is examining, from a British perspective, the threat with which a strategic defensive system would have to cope in the European theatre. Additional awards, involving eight British companies and valued at $1.9 million for a similar area of study, were announced in December 1986. These represent a substantial British involvement in research into the systems that would be necessary for the defence of Europe against ballistic missiles, within the context of a strategic defence system.

527. The defence research establishments have been active, sometimes in conjunction with British industry, in bringing US-funded work to the United Kingdom, in particular in the fields of Battle Management/ Command Control and Communications, Electromagnetic Rail Gun and Countermeasures. Although all of these work packages have been concluded on a government-to-government basis, approximately 85% of the work in each study area was subsequently contracted out by the Ministry to British companies.

528. The reduced SDI budget for the 1987 US fiscal year, and keen competition for the business that exists, mean that British companies will need to work hard to succeed. We believe the effort will be worthwhile; there are valuable contracts to be won and potential for spin-off to other high technology fields.

ROYAL ORDNANCE PLC

529. On 2 April the Government announced that Royal Ordnance had been sold to British Aerospace for a price of £190 million. This step marked the achievement of our long-standing aim of moving Royal Ordnance to the private sector, where it has the best opportunity of developing its full potential as a competitive supplier of high quality defence equipment to the Ministry of Defence and overseas customers. Before this, as part of the continuing process of rationalisation and reorganisation within the company, the Board of Royal Ordnance had decided, with the Government's approval, to sell the tank-manufacturing factory at Leeds to Vickers plc. This transaction was completed last October.

UK-based Contractors paid £5 million or more by MOD in 1985-86

Over £250 million

British Aerospace Plc (Aircraft)
British Aerospace Plc (Dynamics)
British Shipbuilders
The General Electric Co Plc
Royal Ordnance Plc
The Plessey Co Ltd
Rolls Royce Ltd

£100 - 250 million

British Petroleum Co Plc
Esso UK Plc
Ferranti Plc
Hunting Associated Industries Plc
Racal Electronics Plc
Thorn-EMI Plc
Westland Plc

£50 - 100 million

Austin Rover Group Ltd
Dowty Group Plc
General Motors Ltd
Lucas Industries Plc
Marshall of Cambridge (Engineering) Ltd
Pilkington Brothers Plc
The 'Shell' Transport and Trading Co Plc
STC Plc

£25 - 50 million

British Airways Plc
BET Plc
Ossor Electronics Ltd
Digital Equipment Co Ltd
Flight Refuelling (Holdings) Plc
GKN Plc
Harland and Wolff Plc
Other British Government Departments
Petrofina (UK) Ltd
Philips Electronic and Associated Industries Ltd
Short Brothers Plc
Smiths Industries Plc
Vickers Plc

£10 - 25 million

The British and Commonwealth Shipping Co Plc
BMARC Ltd
BTR Plc
Cambridge Electronic Industries Plc
Conoco (UK) Ltd
Control Data Ltd
Cranfield Institute of Technology
Cray Electronics Holdings Plc
DRG Plc
Dunlop Holdings Plc
Ferguson Industrial Holdings Plc
Hawker Siddeley Group Plc
Hewlett Packard Ltd
Honeywell Ltd
Mobil Holdings Ltd
NEI Plc
Paccar UK Ltd
RCA Ltd
Remploy Ltd
The Singer Co UK Ltd
Systems Designers International Plc
Tate and Lyle Plc
United Scientific Holdings Plc
Vantona Viyella Plc
Volvo BM UK Ltd
The Weir Group Plc
Yarrow Plc

£5 - 10 million

Anglo Nordic Holdings Plc
J. Bamford Excavators Ltd
Bodycote International Plc
British Railways Board
British Telecommunications Plc
Cable and Wireless Plc
Cap Group Ltd
Chloride Group Plc
Courtaulds Plc
David Brown (Holdings) Ltd
Frazer Nash Group Ltd
George Blair Plc
Goodyear Tyre and Rubber Co (GB) Ltd
Hillsdown Holdings Plc
Humber Shiprepairers Ltd
IBM United Kingdom Holdings Ltd
Imperial Continental Gas Association
Inchcape Plc
John Brown Plc
Logica Ltd
Martin-Baker Aircraft Co Ltd
ML Holdings Plc
Monsanto Plc
Phicom Plc
Rank Organisation Plc
RFD Group Plc
Rockwell-Collins (UK) Ltd
Ropner Plc
Saft (United Kingdom) Ltd
Schlumberger Measurement and Control (UK) Ltd
Texaco Ltd
Total Oil (GB) Ltd
Trafalgar House Plc
UK Universities
Watercraft Ltd
Waverley Electronics Ltd
Wilkinson Sword Group Ltd

Notes:

1. Includes suppliers of food, fuels and services.
2. Within each financial bracket, contractors are listed in alphabetical order.
3. The status of companies in this list is that at 1 April 1985.

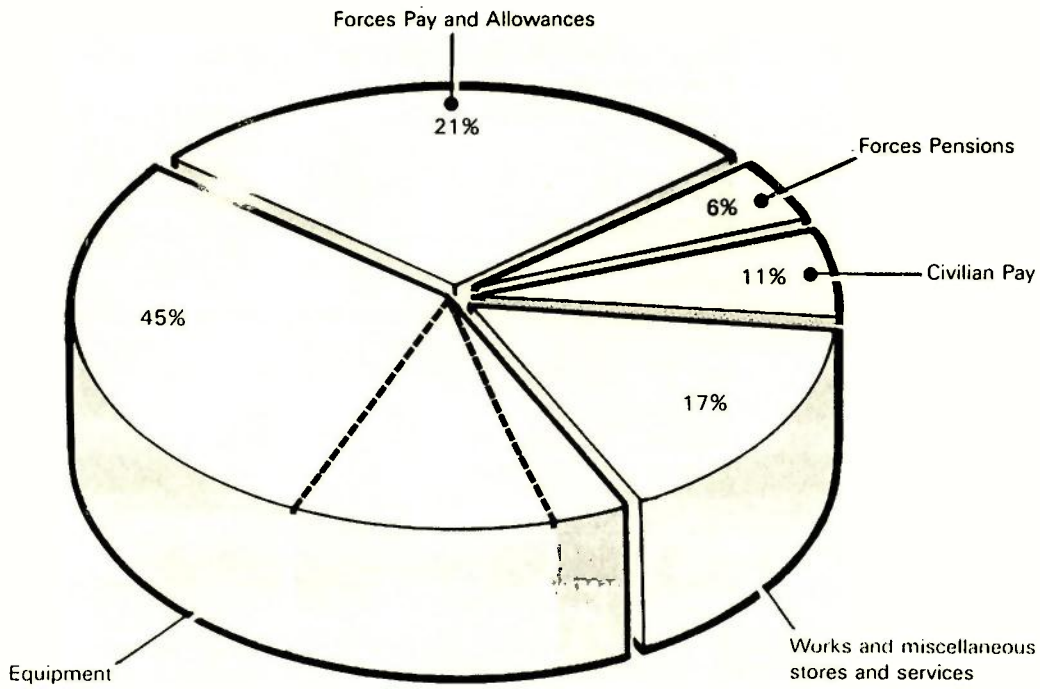
Managing Defence Resources

THE DEFENCE BUDGET

601. The defence budget for 1987-88 is £18,782 million. Apart from minor adjustments, this is unchanged from the cash provision announced in the 1986 Public Expenditure White Paper. The budget includes provision of £257 million for Falklands costs, compared with £435 million in 1986-87. Similarly, the defence budget for 1988-89 also remains as agreed last year at £18,980 million. Planned provision for 1989-90 is some £19,470 million, an increase of approximately £490 million over the previous year.

603. On current inflation assumptions, and taking into account the latest forecast of spending in 1986-87, the defence budget is expected to decline by some 5% in real terms over the 1986 Public Expenditure Survey period, broadly levelling out in 1989-90. This will be partly offset by falling Falklands costs. Nevertheless, as explained in last year's Statement, the ending of the commitment to maintain real growth inevitably means that difficult choices have to be made between relative priorities in o

Figure 8 The Divisions of the Defence Budget by Principal Headings 1987-88



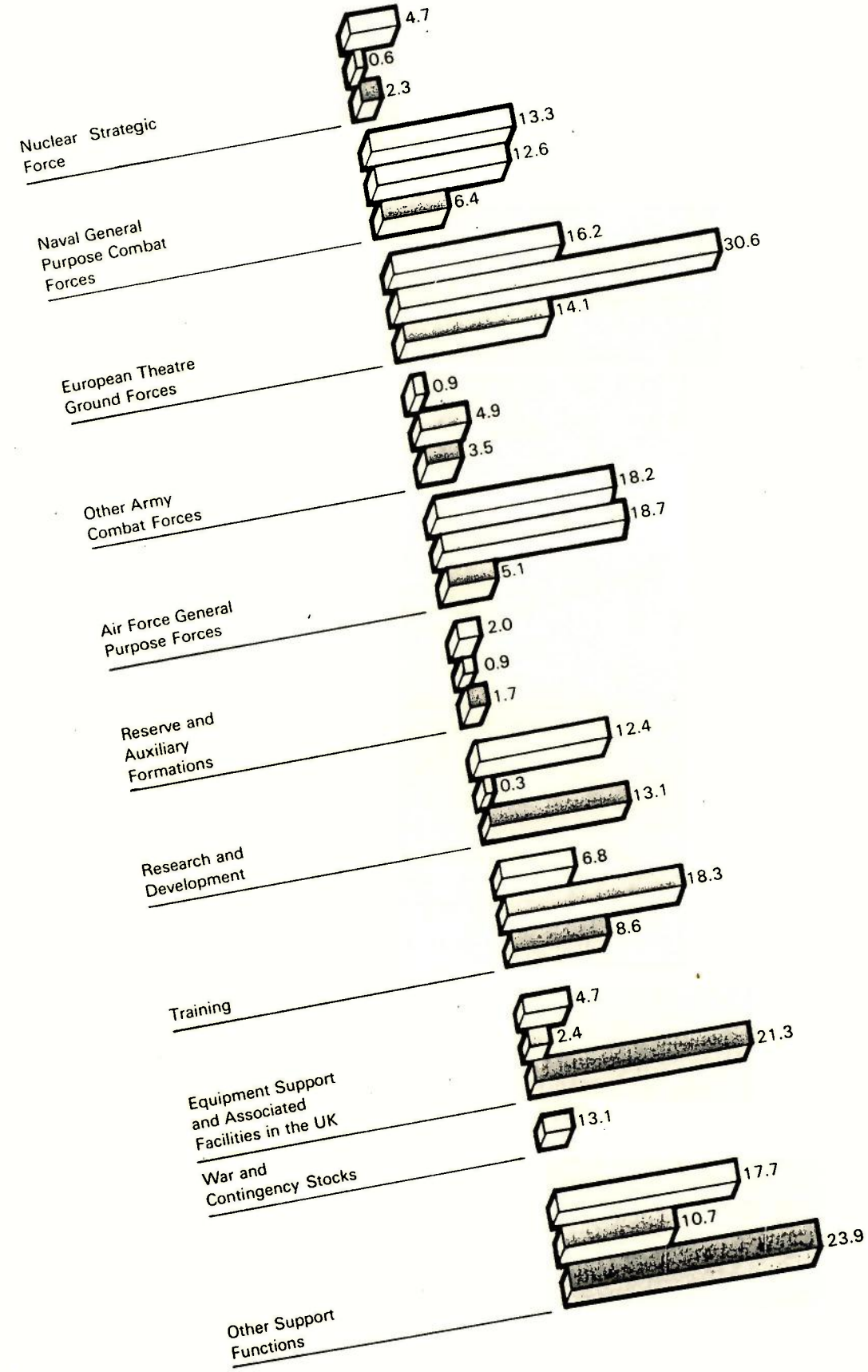
Note

[1] Percentage of equipment expenditure based on the last five years.

602. A breakdown of the defence budget by main areas of expenditure is shown in Figure 8, while Figure 9 analyses defence resources by major programmes. An illustration of the cost of our main commitments has been introduced at Figure 10. As Figure 11 shows, in both absolute terms, as a percentage of gross domestic product and *per capita*, the British defence budget continues to be among the highest in NATO.

forward plans. Moreover, the cash demands of the committed programme must determine the rate at which new commitments can be accepted, within agreed resources. That said, given the real growth achieved from 1978-79 to 1985-86, from which we continue to benefit substantially despite the current decline, we can maintain

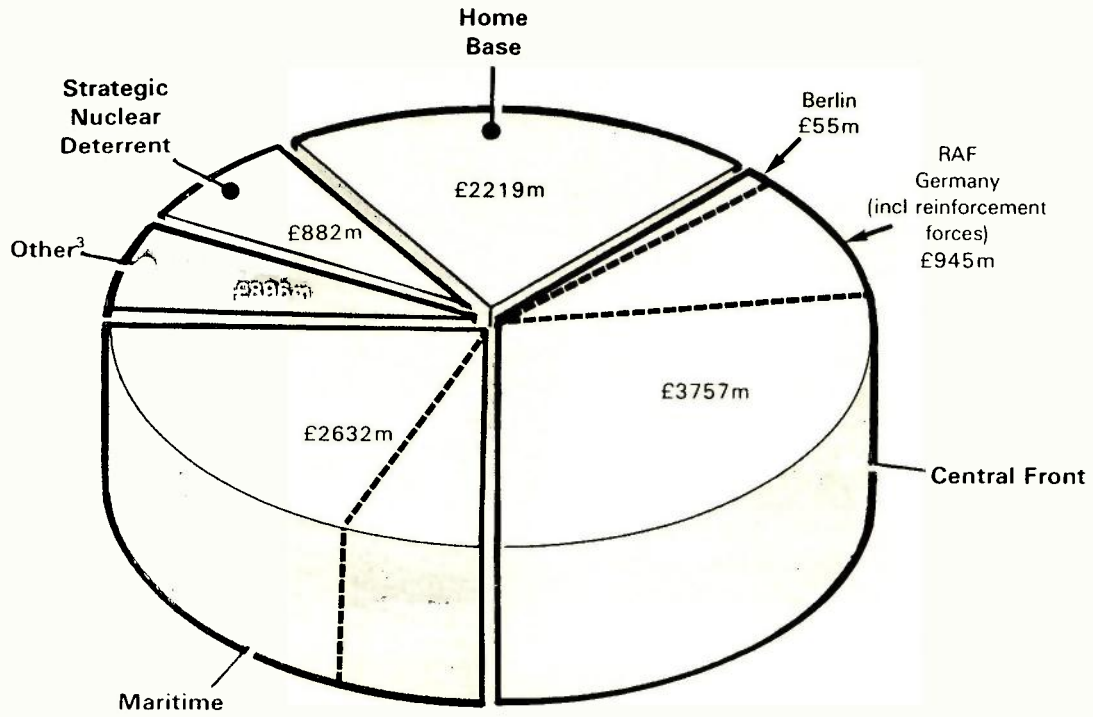
Figure 9 An Analysis of Defence Resources (1987-88) by Major Programmes



Note

A more detailed functional breakdown of the defence budget is given in Table 2.3 of Volume 2: the manpower devoted to each function is set out in Table 4.3 and Table 4.4.

Figure 10 Estimated Costs of Defence Commitments for 1987-88[1,2]



Notes

[1] The total cost matches the total expenditure (£10,386 million) covered by the first six sections of Table 2.3 of Volume 2.

[2] All the costs shown include directly attributable expenditure on capital works and equipment and are running costs for materiel and manpower. The costs of operational headquarters, bases and general operational support have been attributed *pro rata*.

[3] 'Other expenditure' in this diagram includes the costs of amphibious capability, the Allied Command Europe Mobile Force (air and land), the United Kingdom Mobile Force, and out-of-area commitments.

our main defence roles, although it will remain important to exercise restraint and vigorously to pursue good management and improvements in output.

VALUE FOR MONEY

604. Obtaining better value for the money spent on defence remains an important aim, and recent Statements have described the major reforms that we have introduced to this end. Progress on a number of these measures, including the application of greater competition and collaboration in the procurement of defence equipment, is described in Chapter 5. Progress in other areas is described below.

Transferring Resources from Tail to Teeth.

605. Our defence ultimately depends on the strength and efficiency of our front-line troops. To do their job properly they rely on a range of support activities, from the supply of ammunition and maintenance of equipment to the provision of pay and catering services. Our aim has been to provide that support (the 'tail') as cost-effectively as we can so as to enable the maximum possible resources to be released to the front line (the 'teeth').

— Since 1979 we have cut the number of UK-based civilian staff by about 81,000, a reduction of some 33%. Further reductions will be sought by a continuing programme of economy measures and contracting out. Taking account of the transfer of the Royal Dockyards to commercial management (see paragraphs 620 and 621) our aim is to reduce the number of our civilian employees to about 148,000 by 1 April 1988. If possible we shall improve on this figure.

— The Royal Navy has reduced its uniformed strength by 7,200 since the publication of *The Way Forward* in 1981 and has pared back its support area. As a result, some 70% of uniformed manpower is now devoted to the front line and its direct support.

— The Army's Lean Look programme has identified 4,000 uniformed support posts that could be cut, amalgamated, filled by civilians, or put out to contract, thus releasing military personnel for duty in the front line. We plan to achieve this target by 1990; among other things it will release manpower for the new armoured regiment forming in BAOR next year.

— Since 1984 the RAF has released a further 1,700 posts from the support area in the fields of catering, aircraft-servicing and supply. Recent examples are servicing and supply functions at RAF Shawbury and support posts in University Air Squadrons, both of which have been put out to contract.

Financial Management

606. The Government's aim to improve the way in which Whitehall manages its resources led to the launch of the Financial Management Initiative in 1983, the aims of which were set out in Cmnd 9058. The Ministry of Defence has played its full part in this effort.

607. Following an internal survey last year, procedures in the fourth (1986) round of **MINIS** (the Department-wide management information system for Ministers and top management) were extensively modified to increase the emphasis on efficiency measures and to provide a comprehensive top management review. Stress is being laid on three management principles:

— aims and responsibilities must be clear, and authority must match responsibility;

— management must be accountable;

— authority must be delegated to the greatest possible extent.

Our aims will include moving work into the private sector wherever it is cost-effective and consistent with operational needs to do so.

608. The introduction of **Staff Responsibility Budgets** (SRBs) and **Executive Responsibility Budgets** (ERBs) is proceeding as planned:

— SRBs for personnel and some personnel-related costs now cover 98% of UK-based civilian staff and some 18% of Service personnel in the support field — an annual expenditure of £1.6 billion.

— The three-year implementation programme for ERBs in the maintenance and support areas continues. In 1987-88 over 300 units with annual operating costs of about £3.5 billion will have budgets.

— In 1987-88 there will be a programme of pilot schemes aimed at testing out higher-level ERBs (which will include headquarters costs) in a number of management areas. In addition, it has been decided that ERBs should be brought more fully within the cash management system, and the necessary work is in hand.

609. Both ERBs and MINIS require the setting of specified objectives and measurement of performance against them. Considerable attention is being paid to the development of improved performance indicators (which are already used for day-to-day management purposes). Additionally, a number of value-for-money targets have been set, for example for disposing of married quarters, reducing stock holdings and improving energy efficiency.

610. The introduction of a comprehensive corporate plan and related Financial and Management Information System for the Quartermaster General's Department is another initiative in this field. The plan sets out aims and targets for a progressive improvement in efficiency in the Army support area, performance being monitored through a computerised system. Corresponding systems for other areas of the Ministry are under consideration.

611. To integrate these management initiatives, and in line with the aims of Cmnd 9058, the Financial Planning and Management Group (FPMG) — the senior body in the Ministry of Defence responsible for management of resources — has extended its role to cover management strategy and performance. A joint civilian and military Financial Management Development Unit has been created to provide support to the FPMG in this role. It has begun a major study into the Department's future management strategy, including such matters as the coverage of the budgetary systems and the precise nature of the FPMG's new management role.

PERSONNEL

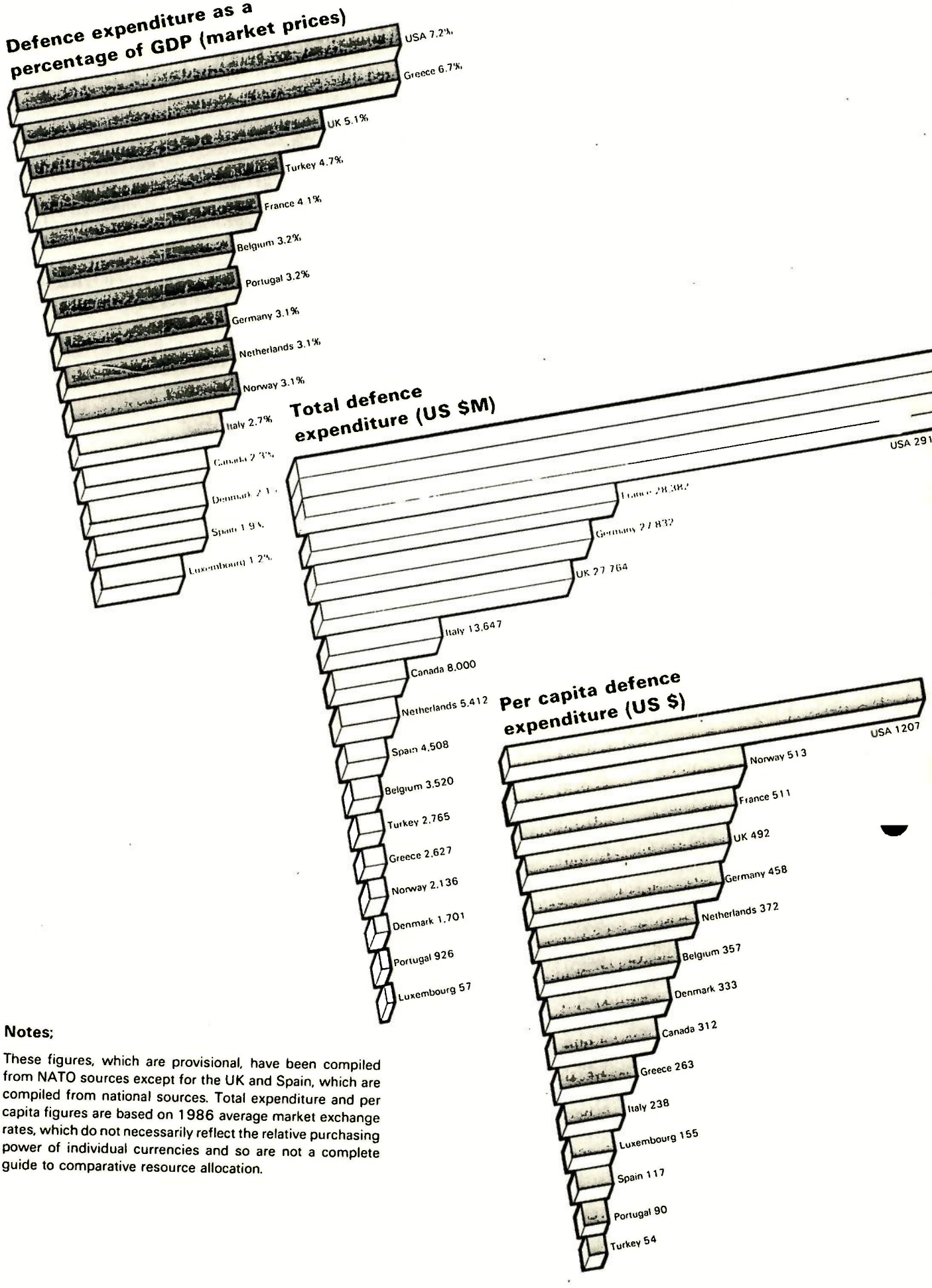
The Services

612. Recruitment to the Services continues to be generally satisfactory. There remain shortfalls of both officers and other ranks in certain specialist areas, where competition with the civil sector for scarce skills continues unabated; nevertheless, most recruiting targets are being met. We have achieved some 91% of target for entry into officer training and over 99% for other ranks in 1985-86. We expect that over the next few years the recruiting of other ranks may become more difficult as the population in relevant age groups falls.

613. The level of voluntary outflow by officers is still a cause for concern in some areas, but in general terms is not critical, while for Servicemen the rate is stabilising. The annual rate of applications from officers at December 1986 was 3.7% of the trained strength (compared with 5% in 1978-79 and 3.9% at December 1985), while the proportion of those who actually left was 3.2% (4% in 1978-79 and 3.4% at December 1985). Applications from Servicemen for premature voluntary release were running at an annual rate of 3.1% of trained strength in December 1986 (as compared with 6.8% in 1978-79 and 3.4% at December 1985), with actual exits at 2.8% (4.4% in 1978-79 and 2.8% at December 1985).

614. Recent studies into why Service personnel leave prematurely suggest that the most common reason is the turbulence of Service life, and particularly its effect on personal plans and the separation from home and family. Operational commitments often make this unavoidable; steps are nevertheless being taken wherever possible to improve matters, for example by extending tour lengths. The results of studies on the attitudes of Service wives, which may contribute significantly to a Serviceman's decision to end his career early, are being considered by the Department. The studies recognise the need to alter the relationship that exists between the Services and the wives of their personnel to reflect the changes that have taken place in British society during the past 30 years.

Figure 11 A Comparison of Defence Expenditure: NATO countries 1986



Notes;

These figures, which are provisional, have been compiled from NATO sources except for the UK and Spain, which are compiled from national sources. Total expenditure and per capita figures are based on 1986 average market exchange rates, which do not necessarily reflect the relative purchasing power of individual currencies and so are not a complete guide to comparative resource allocation.

615. The Government has maintained pay at a competitive level, and pay does not generally appear to be a significant factor in decisions to leave the Services. Our policy is to provide the appropriate conditions of service, taking account of the particular circumstances of Service life, within the limits of justifiable public expenditure. A comprehensive review of armed forces allowances is under way to ensure that they remain appropriate to current conditions; in this context, a Service Contract Scheme has been introduced providing improved arrangements at a lower cost to the taxpayer for Service families moving their household goods on posting. Other changes will be made where necessary to meet the developing needs of the Services.

Civilians

616. As we reported in last year's Statement, we are having difficulty in recruiting and retaining certain categories of staff, in particular scientists and engineers, and those in disciplines that are in short supply nationally, such as accountancy, Automatic Data Processing (ADP) and electronics. Problems are also being experienced in the recruitment and retention of certain industrial craftsmen, and of clerical and secretarial staff in London and a number of other areas, predominantly in the south of England. Although the rate at which staff — especially those with high potential — are leaving the Department is slightly down on last year, the situation is still causing considerable concern.

617. The steps that we are taking to improve matters include:

— special pay additions targeted on skills for which recruitment and retention are particularly difficult;

— improvements to the structures of the Professional and Technology Group, and of the Secretarial and Clerical support grades, which have resulted in pay increases for many of these staff;

— increases in, and extension of eligibility for, accountancy and ADP allowances;

— special payments to certain high quality scientific recruits;

— introduction of the Defence Engineering Service (see below).

The effect that these measures are having in securing the staff we need to maintain the defence programme is being closely monitored. Initial signs are encouraging.

Defence Engineering Service

1. Engineers play a key role in the procurement of defence equipment and in ensuring value for money from the £8 billion spent annually on equipment for the Services. The Ministry of Defence employs some 14,000 civilian engineering specialists in this field, of whom some 2,000 are professionally qualified. They are involved in all aspects of the procurement cycle from initial concept through to in-service support. To ensure that their skills and abilities match the changing needs of the work, we are making a number of radical changes in their management.

2. We have established a new **Defence Engineering Service** (DES), which brings together in a single professional group all the civilian engineering specialists in the Ministry of Defence working on defence systems and equipment. We have done so because:

- the nature of the work has changed considerably. Much detailed design and supervision has been devolved to industry, while the projects that the Ministry has to manage are becoming increasingly large and complex. This more predominantly managerial role requires our engineers to have greater breadth and depth of expertise to oversee both the business and technical aspects of contractors' work.
- the spread of technologies with applications across the range of equipment procurements is increasing, and while some specialisms remain, electronics, for example, is increasingly applied across the whole field.
- the national scarcity of qualified engineers makes it imperative for the Ministry of Defence to use to best effect those people it recruits, and to offer a career that will encourage them to remain.

3. The DES will help to ensure the most productive use of our skilled engineering specialists and improve their status, opportunities and career prospects. A Head of Profession of the DES has been appointed, responsible for the maintenance of professional standards and training and for representing the interests of the Group at the highest levels. New personnel management systems are being introduced, which aim to:

- identify talent and ensure that all staff have the opportunity to develop the limits of their potential;
- remove artificial barriers to movement between line management areas;
- provide structured experience and training for future project managers;
- give greater emphasis to technical and management training;
- expand sponsorship of students reading for engineering degrees.

4. Plans are also well advanced for the recruitment of a small number of very high calibre graduate engineers in 1987 to a new fast-stream career path. This scheme offers individual career development and training, and accelerated promotion prospects. Recruits will be comparable in ability and have similar career prospects to the Administration Trainees recruited to the Administration group.

SECURITY

618. The need for cost-effective security is now probably more important than ever before. To ensure that the aims of hostile intelligence services are thwarted or made as difficult as possible demands a continual review of the threat and, where necessary, re-deployment of our resources. Every breach of security requires investigation and perhaps re-consideration of our security rules.

619. There are three areas of particular concern:

— **The Terrorist Threat:** Over the past few years increasing resources have been devoted to countermeasures against terrorist attack. In Great Britain, as an additional measure, regular security exercises are now carried out by the three Services to test all aspects of units' counter-terrorist security arrangements.

— **Static Communications Units:** The Security Commission Report of October 1986 endorsed the action taken by those concerned with tightening up security and made three further recommendations: on exit searches, security records and the posting of young Servicemen to such units. We are now implementing them in the most cost-effective way.

— **ADP Security:** This continues to increase in importance. Additional resources are being devoted to safeguarding hardware and software and to the protection of electronic emissions from eavesdropping.

ROYAL DOCKYARDS

620. Since last year's Statement commercial management has been introduced to the two Royal Dockyards at Devonport and Rosyth. This followed the enactment of the Dockyard Services Bill, which

The Ministry of Defence Police

1. The Ministry of Defence Police (MDP) can trace its origins back as far as 1686 when, on the advice of Samuel Pepys, the Special Commissioners of the Navy appointed 'porters, rounders, warders and watchmen' to guard the naval dockyards. In 1841 the Metropolitan Police were called in to police two of the yards in their district, and in 1860 they were authorised by Parliament to police all the principal naval dockyards in England and Wales, as well as certain War Office establishments. From 1860 police powers could be used up to 15 miles outside these places, in respect of Crown property or of persons subject to military discipline. Legislation was later introduced for similar establishments in Scotland and, on its creation, for those of the RAF. But these additional duties eventually proved too much for the Metropolitan Police and, in 1923, the Special Constables Act authorised the Service Councils to form their own police forces. The responsibilities of these forces were extended by subsequent legislation to include all military premises in the United Kingdom and still later to premises occupied by visiting forces.

2. The Force in its present form was established in October 1971, when the separate Admiralty, Army Department and Air Force Constabularies were united under the command of a single chief constable. In 1984, there was a further extension of their employment outside MOD premises by an Act that had the effect of extending the 1860 and 1923 Acts to the premises of the privatised factories of Royal Ordnance plc. In the same year, an enquiry by the House of Commons Defence Committee drew attention to the difficulty the MDP was experiencing in fulfilling these tasks with the resources available. We therefore commissioned an independent and wide-ranging study to formulate a long-term strategy for the Force's future role, composition and size. The MDP Police Review Committee published its report, known as the Broadbent Report, as Cmnd 9853 in July 1986. The Government's response was announced in the House of Commons on 25 July 1986.

3. As a result of the Broadbent report, changes have been made in the management and organisation of the Force. The Ministry of Defence Police Act 1987 received the Royal Assent in March. It rationalises the powers of the MDP and provides a statutory basis for the Defence Police Federation. A MDP Committee has been appointed and has held its first meeting. Arrangements are being made for an inspection of the Force by Her Majesty's Inspectorate of Constabulary. MDP liaison officers have been appointed to a Command headquarters of each of the three Services in the United Kingdom. Work continues on other recommendations, notably amplifying the instructions on the roles of commanding officers, senior security officers and senior MDP officers, the complementing criteria for MDP posts,a MDP budget, the provision of MDP services to bodies outside the Ministry of Defence, and a possible special constable scheme. We welcome these changes in the management of the Force, and believe they will ensure that the MDP is better able to carry out the duties required of it.

4. The 5,000 or so men and women of the current Force are increasingly in the public eye and display both dedication and professionalism. Of the threats that they help to counter, protest demonstrations and marches are no new phenomenon at defence establishments: the first Aldermaston march was held in April 1958. But it was not until these became more outwardly aggressive at the beginning of the 1980s that the presence and role of the MDP received wide publicity. Since then this kind of protest activity has increased dramatically. In 1979-80 MDP officers were involved in two such events; in the following 12 months, 29; and in 1985-86 the number had increased to over 700.

5. In these tasks and all others that we require the MDP to carry out, they acknowledge the prime responsibility of Home Department police forces for the enforcement of the law. They are, of course, always ready to assist other forces when Ministry of Defence interests are involved.

received Royal Assent on 25 July 1986 and came into effect on 26 September. A number of bids for the contracts to manage the Dockyards were received in response to the Ministry's Invitations to Tender. These were evaluated by a Tender Board, supported by a team of officials and consultants, and were the subject of further detailed consideration and negotiation with the companies concerned. After consultation with the Trades Unions, term contracts were signed with Babcock Thorn Limited (BTL) on 27 January for the future operation of Rosyth Dockyard, and with Devonport Management Limited (DML) on 24 February in respect of Devonport Dockyard. Both contracts are for a period of seven years from 6 April 1987.

621. Although the Secretary of State was satisfied that he had complied with his duties under the Dockyard Services Act to inform and consult the Trades Unions, they challenged this in the Courts. The High Court subsequently refused to make a declaration that the Secretary of State had acted in breach of his statutory duties. Accordingly, on 6 April the Dockyard employees were transferred into companies formed by the Secretary of State, which were taken over by DML and BTL for the duration of their term contracts.

DEFENCE MEDICAL SERVICES

622. Last year we reported that we were studying the possibility of putting out to contract work currently undertaken by uniformed and civilian dental technicians, as well as the direct supply of drugs to hospitals. The dental technicians study has been completed and, with the exception of certain key posts that will be filled by Service personnel to meet the war role, all dental technical work will be put out to contract from May this year, with a saving of 79 uniformed and 22 civilian posts and a net annual reduction in costs of about £125,000. The direct supply of drugs to hospitals is still under consideration.

HIGHER DEFENCE STUDIES

623. In addition to sponsoring Defence Fellowships and Service and civilian attendance on university post-graduate courses, the Ministry of Defence both runs and participates in a number of seminars and conferences with the academic world. Last autumn we held our first regional seminar, in cooperation with the University College of Wales, Aberystwyth. Another major development in 1986 was the establishment of a Defence Lectureship at the Centre for Russian and East European Studies, University of Birmingham. This lectureship, the sixth currently funded by the Ministry, will specialise in Soviet defence studies.

THE DEFENCE ESTATE

624. The defence estate exists to meet the Services' needs for accommodation, operational bases, support facilities and training areas. Details of its composition are given in Tables 5.13 and 5.14 of Volume 2. Regular reviews ensure that our land holdings are used efficiently and are no larger than necessary. Our continuing programme of selling surplus property provides both savings in maintenance costs and funds for use elsewhere, and specific targets for disposals were set for the first time in 1985-86. Receipts in that year for land and buildings (including married quarters) totalled some £60 million. In 1986-87 receipts of some £70 million are expected against a target of just under £64 million. We must, however, acquire more land when it is essential to meet specific requirements. There is, for example, insufficient training land to meet the needs of the increased number of regular and reserve units that have to be trained in this country. For this reason we intend to purchase suitable land when it becomes available.

625. We take seriously our responsibility to conserve and improve the land used for military purposes. The defence estate contains many areas of beautiful

AIDS and the Armed Forces

1. With growing evidence of the threat posed by AIDS, the Ministry of Defence recognises that the armed forces are no less at risk than any other section of the community from the spread of the disease around the world. An internal working party, including medical, legal, Service and policy staffs, was established in March 1986, charged with making proposals for preventive education and publicity and on personnel policy aspects of AIDS. Its first task was, as a matter of urgency, to concentrate on preventive education and publicity. Its recommendations were:

- wide distribution of posters to Service units, to be prominently displayed;
- wide distribution of the Health Education Council booklet, *AIDS — What Everybody Needs to Know;*
- comprehensive briefing by medical staffs of units serving, or about to deploy overseas; and
- incorporation of AIDS warnings into all drug education briefings.

2. These recommendations are being implemented. Some 11,000 posters have been distributed to Service units; 330,000 copies of the Health Education Council booklet have been given to all Service men and women personally; and 161,000 copies of the DHSS leaflet, *AIDS: Don't die of Ignorance,* are being provided for unmarried personnel in barracks, aboard ship and serving overseas, who would not otherwise have received it. In addition to all this, the central medical staffs are taking appropriate precautions in routine procedures, for example by screening blood supplies for use at home and abroad, and arranging for panels of safe donors to provide emergency supplies in certain areas overseas.

3. There are no illusions in the armed forces as to the potential threat from AIDS. The working party will remain in being to monitor developments both nationally and inter-nationally, and will continue to recommend to senior management and Ministers such steps as are judged necessary to safeguard the health of all our personnel.

countryside, and we put much effort into protecting the environment throughout the estate. We try to encourage recreational use whenever safety and defence needs permit. In many places, military use has protected land from development or intensive cultivation, and so some defence sites have become very important environmentally. Salisbury Plain Training Area, for example, contains more than one third of the remaining chalk downland in southern England and some 1,700 archaeological monuments. To investigate ways of enhancing the protection given to these monuments, an Archaeological Working Party was established in 1984, in conjunction with English Heritage, the Nature Conservancy Council and County archaeologists. Their report, which was published in April 1986, was widely praised and will lead to a range of improvements in the management of this important part of our heritage. In addition, the Maritime Heritage Area, which will include HMS *Victory*, HMS *Warrior*, the *Mary Rose*, their museums and the Royal Naval Museum Portsmouth, is being developed by charitable Trusts in a part of Portsmouth Naval Base no longer needed for defence purposes.

Energy Efficiency

626. In last year's Statement we announced a new initiative to improve the Ministry's energy efficiency, building on earlier improvements and taking advantage of potential savings in running costs. A target has been set of a 25% reduction in expenditure (£260 million in 1985-86) over five years on non-operational energy. All sites on the defence estate are now required to have an Energy Manager, and all should have had an energy survey by April 1991.

THE METEOROLOGICAL OFFICE

627. The Meteorological Office serves the armed forces as its largest single user and, as the national meteorological service, provides free weather forecasts and warnings to the public through the media. In addition, it supplies more detailed information, on a repayment basis, tailored to the needs of specialised users, including industry, commerce, the legal profession and, in particular, civil aviation. Nearly one third of the cost of the Meteorological Office is met by these repayment services, receipts from which totalled £21.8 million in 1985-86. The Office has a marketing organisation actively seeking new business.

628. The span of services provided to the community is wide, ranging from advice on the likely directions in which an outbreak of foot-and-mouth disease might spread, to research into the effect of atmospheric pollutants on the climate. The Office has continued to improve the range of its services over the last year. The United Kingdom weather radar network has been expanded by means of collaborative arrangements with some Water Authorities, who have a close interest in prompt reaction to forecasts of rain. And specialised warnings of freezing road conditions are being made available to a number of Local Authorities, enabling them to save money by reducing the need for precautionary road-gritting operations.

629. Improvements in the range and accuracy of weather forecasts are under-pinned by a tautly managed research programme, aimed at better meeting the requirements of defence, civil and commercial customers alike. The main areas of research include development of a very fine-scale numerical forecasting model, refinement of weather radar inputs and exploitation of new satellite information.

630. The continuing search for economies has led to further rationalisation in Meteorological Office support to the RAF. Concentration of services at some key airfields has permitted the closure of sections in Scotland (Pitreavie), the south west of England (Mount Batten) and central southern England (Upavon). This has been achieved only on the clear understanding that Air Force operational integrity is not put at risk.

PUBLIC RELATIONS

631. Doors opened to the media during the year included those of the Chemical Defence Establishment at Porton Down, RAF Greenham Common, and the Aeroplane and Armaments Experimental Establishment at Boscombe Down. The programme has also included facilities on board the ships of the round-the-world Royal Navy deployment, GLOBAL 86; a press party visit to the out-of-area exercise SAIF SAREEA in Oman; and media coverage of the NATO exercise BOLD GUARD in Denmark and the Federal Republic of Germany (see Chapter 4). We hope that these visits, and many others, have led to a greater understanding of the role of the Services and their support establishments and have served to dispel the false air of mystery surrounding some of the places and issues involved.

632. We are also making greater efforts to reach the public direct. For example, proposals to modernise the Ballistic Missile Early Warning System site at Fylingdales in Yorkshire were explained to both the community and the press in a series of briefings. Similarly, the progress of development at Molesworth — the second United Kingdom cruise missile base — and at the Clyde Submarine Base were the subject of parallel community and press briefings.

633. Publications, exhibitions and films offer further means of reaching the public. An illustrated booklet describing British defence policy is now produced to coincide with publication of this annual Statement and is distributed free. A revised exhibition about NATO and British defence policy was mounted last year at eight sites and proved very successful. A new film — *Keeping the Peace* — setting out the case for deterrence has been made and will, we hope, make a significant contribution to public understanding of defence issues.

The Forces of East and West

CONVENTIONAL FORCES

1. One important side-effect of the Reykjavik summit was to focus attention on the conventional balance of forces between East and West. Reductions, or potential reductions, in nuclear weapons make it all the more important to tackle conventional disparities, as the Prime Minister and President Reagan agreed at Camp David last November.

Calculating the Conventional Balance

1. Calculating the comparative conventional strengths of NATO and the Warsaw Pact is a complex task. The simplest accounts are those restricted to numbers of personnel, formations or items of equipment on each side. As we explained in last year's Statement, even these are difficult to carry out. But when it comes to more sophisticated assessments, there are many more problems.

2. Some sources express the balance in terms of manpower division equivalents (MDE): the manpower totals in major combat units are divided by the strength of a standard US armoured division (18,300 men) to produce the MDE total. While this method has the merit of simplicity, it takes no account of the organisation and combat power of the forces in question: Warsaw Pact divisions usually consist of fewer personnel than many NATO divisions but contain more tanks and artillery; so this system would tend to underestimate their real strength.

3. Other analysts attempt to take into account organisation and combat power, mobility, firepower and survivability of individual weapons, to produce for any given unit a weighted unit value, which can then be expressed in terms of armoured division equivalents (ADE). Assessments of individual weapon-effectiveness ratings are, however, inevitably subjective. Moreover, key weapon systems (for example attack helicopters and anti-aircraft artillery) are included by some authorities but not by others.

4. Many other factors also need to be taken into account in a full net assessment, including:

a. **Preparedness:** the availability of forces ultimately depends on their degree of readiness and how easy their mobilisation and reinforcement plans are to implement. The sustainability of forces depends on the quantity and survivability of logistic stocks, and on supply lines of fuel, ammunition, and spares. NATO's reinforcement and re-supply from North America would, for example, face a 6,000 km Atlantic crossing; the Warsaw Pact's supply lines are comparatively short and are overland.

b. **Geography, terrain, and environment:** NATO forces in the Central Region defend a long common border. There are few natural obstacles in the region; and the dense population, in many towns and cities, further complicates both offence and defence. Force requirements differ from those in the Northern Region, which has difficult mountainous terrain that is snow-covered in winter and becomes marshy in summer, and whose flank is the desolate polar region. Requirements in the South are different again: this region is linked by the Mediterranean Sea, and there is a common border in difficult mountainous terrain, with the politically troubled North Africa and Middle East on the flank.

c. **Organisation and doctrine:** Soviet doctrine emphasises offensive mobility, surprise and deception. Ground forces have a pre-eminent role. The Soviet Union also has two branches of the armed forces separately tasked with strategic attack and strategic defence. There are, in addition, differences in political organisation, allied cohesion, training, leadership and morale that would affect the outcome of any conflict.

5. There is so much scope for the exercise of judgement and opinion in assessing factors such as these that attempts to do so rarely command universal approval. We do not therefore seek here to make a complete net assessment but concentrate on producing a number count which, although necessarily simplified and restricted in scope, does at least seek to apply equal criteria to both sides.

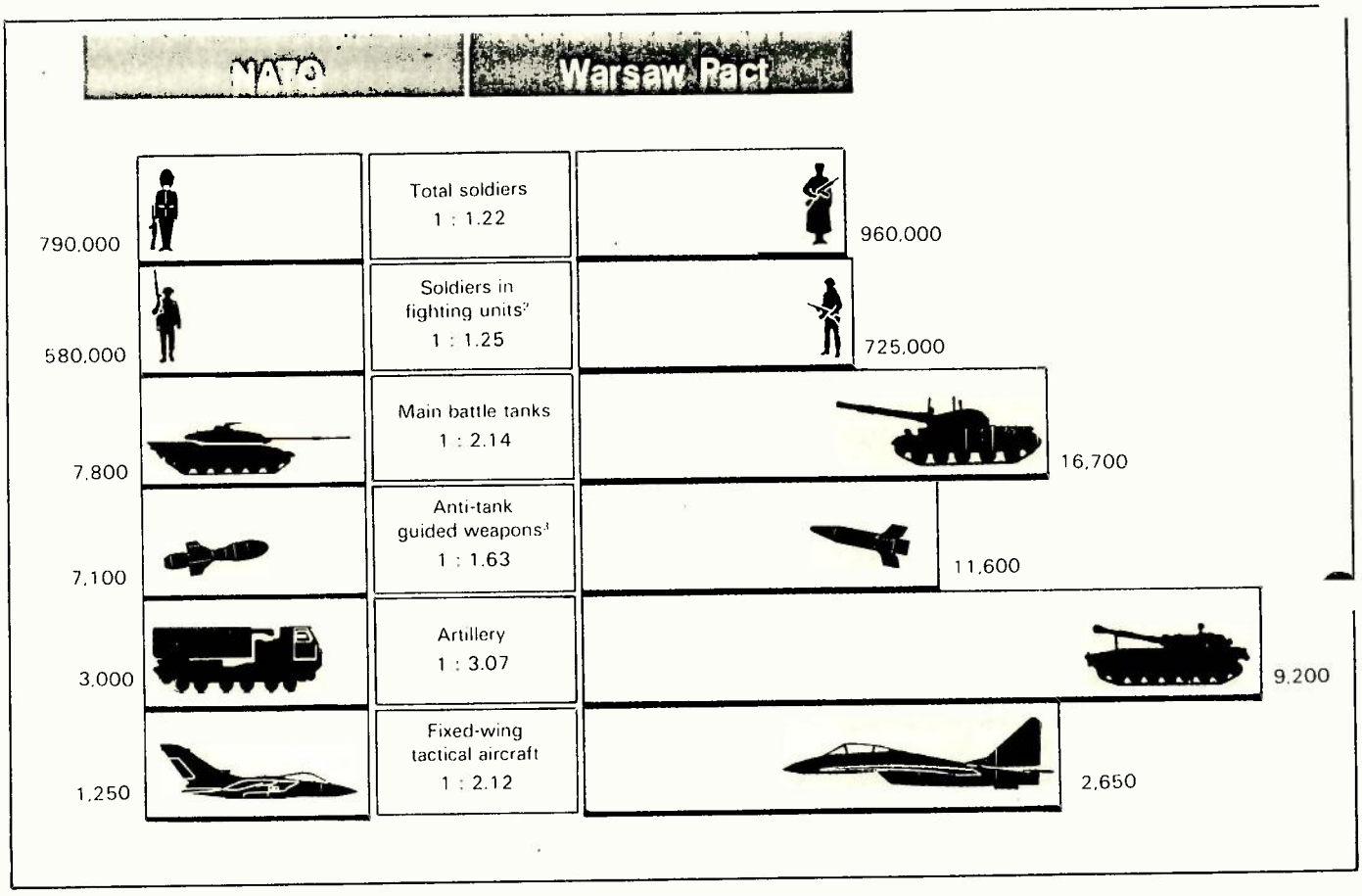
Land and Air Forces

2. In Europe — the area that most directly affects our security — the evidence is of a preponderance of military force in favour of the Warsaw Pact. This is illustrated in Figure 12, which shows the conventional forces of NATO and the Warsaw Pact in place in the Central Region — that is, NATO forces in the Benelux countries and the Federal Republic of Germany; and Warsaw Pact forces estimated to be in Poland, Czechoslovakia and the German Democratic Republic.

3. Figure 13 gives a broader picture of conventional forces in place from the Atlantic to the Urals. This is an area with no agreed definition, but for the purposes of this Statement we have included those forces located in the 14 NATO countries in Europe, and Warsaw Pact forces in Eastern Europe and the 11 military districts of the Soviet Union west of the Ural mountains. The purpose of this illustration is to give a clearer view of the relative strengths of troops and equipment available in Europe, including troops that could be deployed quickly (say within a week) to the Central Front, or which could be involved early in any fighting on the Northern and Southern Flanks.

4. By any objective measure the superiority of Warsaw Pact land and air forces is substantial. Furthermore, any potential aggressor can select the time and place of his attack, and exploit this advantage by massing his forces to achieve overwhelming local superiority in numbers; while a defender such as NATO, committed not to be the first to use force, can only seek to respond before his defence is irretrievably disrupted. Moreover, the Warsaw Pact enjoys geographical advantages: it can move supplies to the front more easily than NATO, most of whose reinforcements of men, equipment and materiel face a long and hazardous Atlantic crossing; and it knows that NATO, with its limited territory and commitment to forward defence, cannot trade space for time so as to

Figure 12 The Current Balance of Forces on the Central Front [1]



Notes

[1] Covers NATO forces in the Benelux countries and the Federal Republic of Germany, and Warsaw Pact forces estimated to be in Poland, Czechoslovakia and the German Democratic Republic. Includes French forces in the Federal Republic of Germany which are not declared to NATO, but excludes the Berlin garrison.

[2] Corresponds to a balance of 57 Warsaw Pact to 33 NATO divisions. Warsaw Pact divisions normally consist of fewer personnel than many NATO divisions, but contain more tanks and artillery.

[3] Crew-served systems and helicopter- or vehicle-mounted systems, but excluding those that may be fired through the gun barrel of Soviet tanks.

concentrate against a main Warsaw Pact attack. These constraints compound the conventional imbalance faced by the Alliance.

Developments in Warsaw Pact Forces

5. The steady improvement in the organisation, training, equipment, and offensive capability of Soviet forces has continued apace during the last year. NATO's technological lead in many areas continues to be eroded. In particular, many of the new Soviet **ground forces** equipments are at least as sophisticated as their Western equivalents, and a wider variety of equipment is being introduced. Improvements during the last year include new armoured vehicles (among them T-80 and T-64B tanks, BTR-80 armoured personnel carriers and BMP-2 infantry combat vehicles), artillery, tactical surface-to-air missile (SAM) systems and more accurate short-range surface-to-surface ballistic missiles (SRBM) armed with improved conventional warheads. Such improvements would facilitate rapid and deep thrusts into opposing defences. The new Frogfoot (fixed-wing) and Hind (rotary-wing) aircraft have been deployed in the forward area in support of ground troops. The Soviet Union is ıking considerable investment in its command, control, and communications (C^3) infrastructure; and development continues of an already elaborate system of hardened command post and re-location systems for the survival of civil and military leaders. The introduction of High Commands of Forces, as an intermediate level of authority between the General staff and front-line commands, has enhanced both the operational flexibility and responsiveness of the Warsaw Pact's forces.

6. Soviet **air forces** are being similarly improved. New agile fighters, Fulcrum and Flanker, armed with their new AA-10 missiles, have a true look-down/shoot-down capability, which will improve Soviet defences against aircraft and, to some extent, cruise missiles flying at low altitude. They will be supported by deployment of the Mainstay airborne warning and control system and Midas tanker aircraft. SAM defences supported by new ground-based radars and communication systems are being modernised. The SA-10 SAM, which has some capability against low-altitude targets with a small radar ss-section, is being increasingly deployed in defence of Moscow and other key military and industrial centres. There are indications of further organisational changes to improve the effectiveness of the air defence forces.

7. Modern military systems are highly dependent on advanced **electronics** for sensors, communications, weapons control and data processing. The Soviet Union has problems in the volume production of some integrated circuits and computers, in which it lags several years behind the West. Nonetheless, there is a very active radar research and development (R & D) programme continually developing new systems; and the Soviet armed forces are improving their ability to counter homing missiles by the employment of a wide range of electronic counter-measures (ECM), jammers and suppressors, and decoy measures. The emphasis in C^3 remains on redundancy and security, increasing use being made of computer systems and automated data aids, as well as satellite communications and land-lines, including secure fibre optics. The use of extremely low frequency to communicate with submerged submarines is also practised. Problems in the electronics industry, particularly in production, will slow down the introduction of new technologies into Soviet military systems but not necessarily impair systems performance.

NATO Forces

8. NATO countries continue with plans to introduce new equipment into the inventories of their **ground forces**, both through replacement programmes and additional purchases. Some 275 main battle tanks of the advanced Leopard II and Challenger types are being introduced this year. In addition, large numbers of tanks currently in service are being upgraded by, for example, the fitting of improved fire-control systems. Among other armoured vehicles coming into service are some 150 new armoured personnel carriers.

9. Anti-armour capabilities are being enhanced through the introduction of almost 400 new missile launchers of the TOW type and of some 13,500 hand-held anti-armour missiles. The ability of forces to defend themselves against air attack will be improved with the introduction of 725 advanced missile systems, including some 550 of the Stinger/Javelin type. Operational and tactical flexibility is being increased by the introduction of over 40 helicopters, both combat and transport, and a small number of fixed-wing transport aircraft.

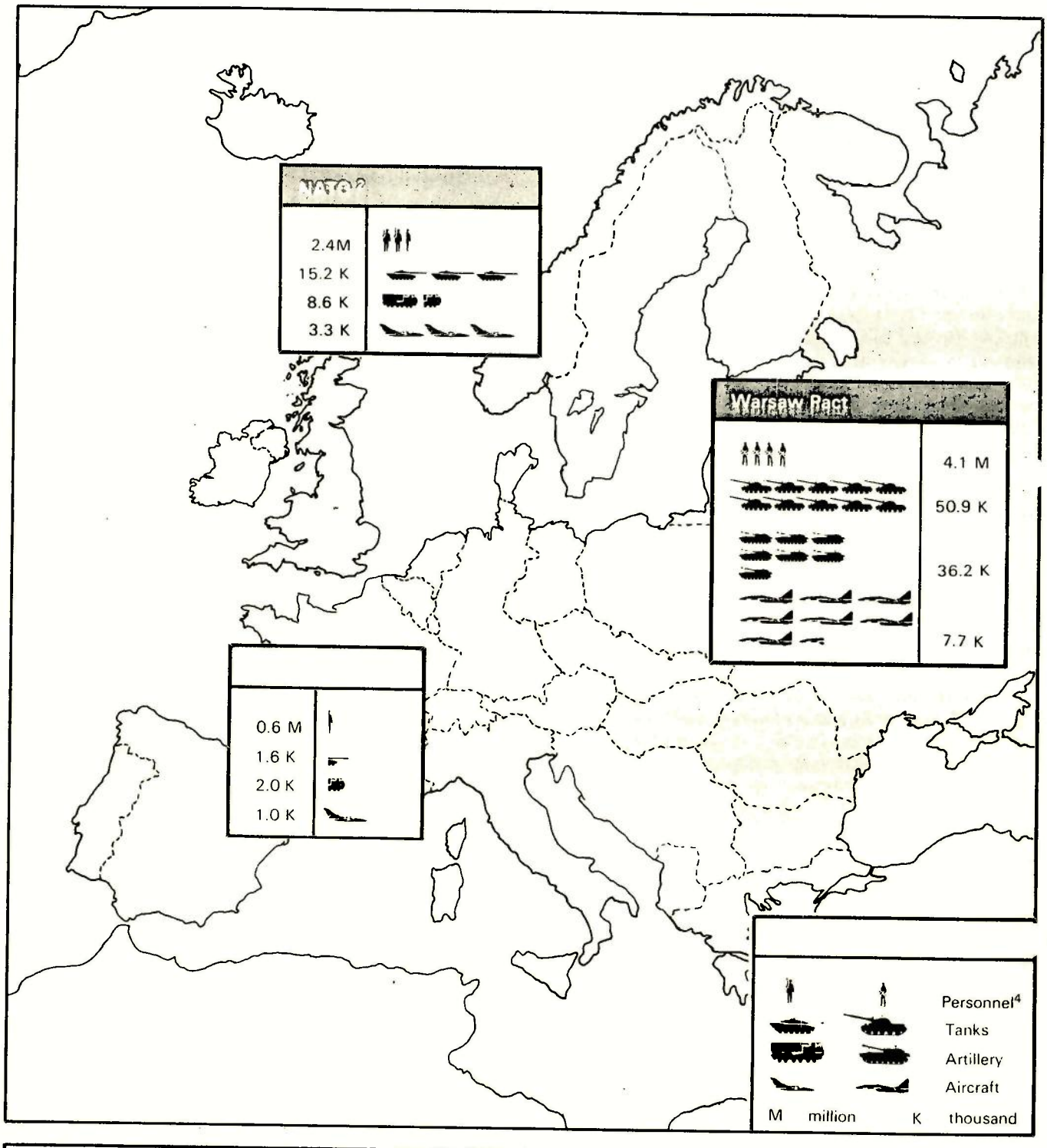
10. NATO **air forces** plan to introduce over 170 new aircraft in 1987; most are combat aircraft, predominantly Tornado and F-16 types. Existing aircraft also continue to be updated. Sustainability in areas such as war stocks of chaff and flare decoys is being improved. Patriot SAM deployments in the Central Region will greatly strengthen air defences in Europe over the next few years. Airfield local defence will be strengthened as more than 50 new short-range SAM systems are brought into service. Total NATO numbers of aircraft and SAMs will, however, remain low compared to the threat.

Maritime Forces

11. Figure 14 shows the principal naval forces of NATO and the Warsaw Pact normally located or based in the North Atlantic and seas bordering Europe. Ships and submarines could be deployed anywhere in this area, but naval forces have been divided according to sea or fleet areas relating to home bases.

12. This picture of the balance at sea needs qualification. Taken as a whole, NATO outnumbers the Warsaw Pact in surface ships. But we cannot ignore the realities of geography and the nature and distribution of the forces deployed by each side. For NATO in-place maritime forces are outnumbered in offensive systems, particularly submarines and bombers, in the Eastern Atlantic. And it is here, and in the shallow seas, that the threat is greatest to NATO's reinforcement and re-supply lines, which are so important to the defence of Europe. As the last war demonstrated, relatively few submarines can do great damage. And the potential threat from the Soviet submarine fleet today is immeasurably greater than that posed by enemy submarines at the outbreak of the Second World War. The conventional wisdom requiring an attacker to outnumber a defender on land is reversed in anti-submarine warfare, and in consequence proportionately larger numbers of surface escorts, hunter-killer submarines, and aircraft can be needed to defend shipping.

Figure 13 The Current Disposition of Forces — Atlantic to Urals[1]



Notes

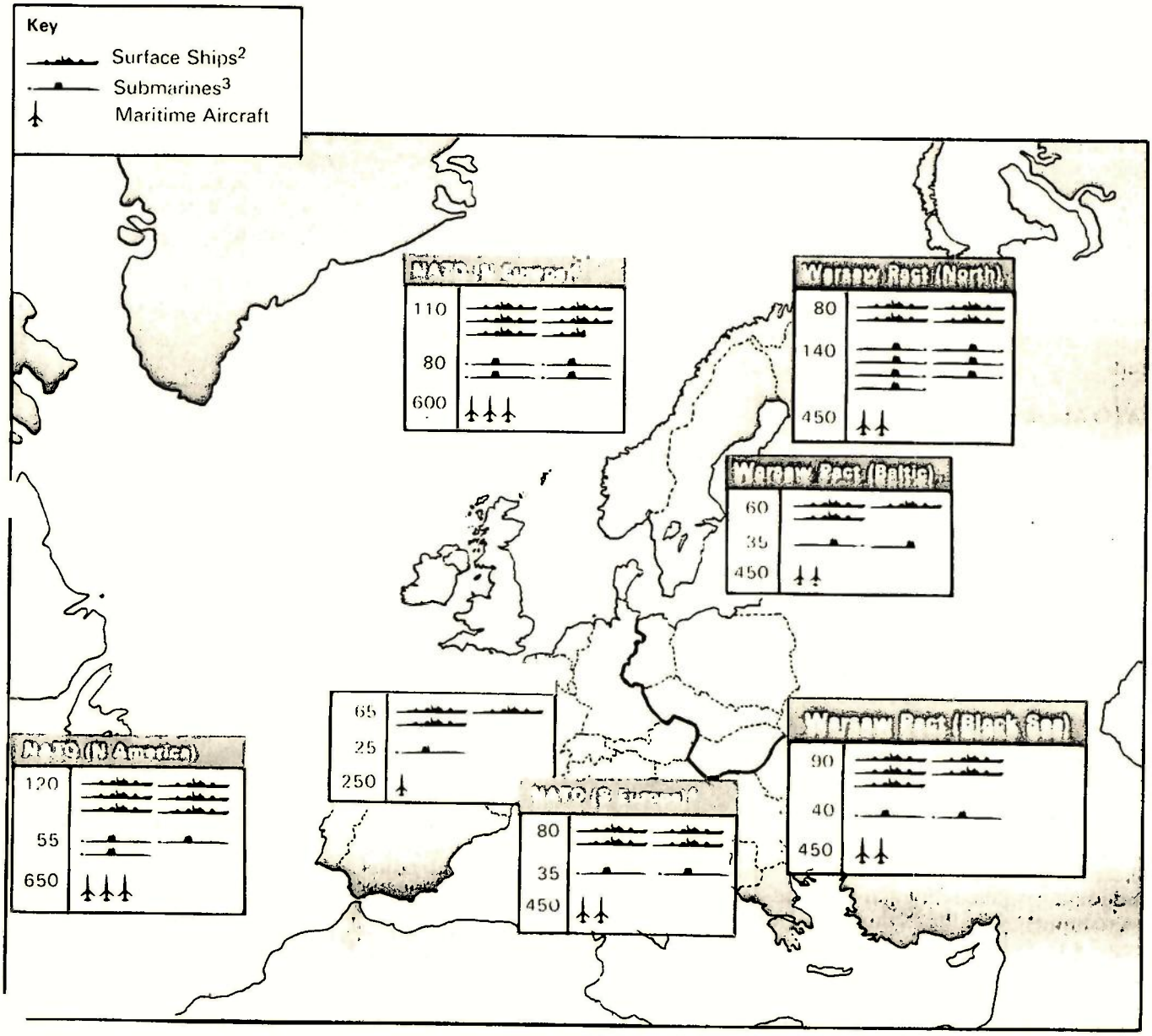
1. For the purposes of this Statement this illustration includes the forces stationed in the 14 NATO countries in Europe, the six non-Soviet Warsaw Pact countries, and the 11 Soviet military districts lying west of the Ural Mountains.

2. French forces in the Federal Republic of Germany are included in the NATO total.

3. France and Spain are members of NATO but do not participate in its integrated military structure.

4. Includes full-time military personnel serving with ground or air forces. Excludes reservists, naval personnel, marines, paramilitary or security forces and uniformed civilian services such as police or customs.

Figure 14 NATO and Warsaw Pact Principal Naval Forces[1]



Notes

[1] Shows the principal naval forces of NATO and the Warsaw Pact normally located or based in the North Atlantic and seas bordering Europe. Approximate numbers are shown.

[2] Principal surface combatants frigates, destroyers, cruisers, aircraft carriers, excluding units in reserve.

[3] Excludes SSBNs and units in reserve.

[4] Includes US forces based in Europe.

[5] France and Spain are members of NATO, but do not participate in its integrated military structure. Their naval forces are divided between the Atlantic and the Mediterranean.

Developments in Warsaw Pact Naval Forces

13. The last year has seen a continuation of the major building programme of both submarines and surface ships. In addition to those carrying ballistic missiles (see paragraph 16), submarine construction includes the Oscar class, each boat armed with 24 SS-N-19 anti-ship cruise missiles with a range of 550 km, at least two classes of powerful, fast and silent nuclear-powered attack submarine (Sierra and Akula), and the Kilo class diesel-powered attack submarine. Surface warships have become larger and more sophisticated, with longer range and greater fire-power, and include the first unit of a new class of large aircraft carrier, currently fitting out in the Black Sea area. Other classes being built include the nuclear-powered Kirov and the Slava class guided-missile cruisers, the Sovremenny and Udaloy class guided-missile destroyers and several other classes of frigate, corvette, and patrol craft.

NATO Maritime Forces

14. NATO's maritime capability is being significantly improved through the introduction of new and more capable ships and by improved equipment and weapon systems, including radars, sonars, ECM and communications. The US Navy is continuing its programme to increase its strength to about 600 ships. Some 30 new helicopters will also join the NATO navies next year in anti-submarine and airborne early warning roles, while helicopters and aircraft currently in service will be modernised, including the fitting of air-to-air refuelling links and advanced electronic warfare equipment.

NUCLEAR FORCES

Strategic Forces

15. Strategic forces, as defined in SALT II, are those whose range or type of delivery system allows them to undertake intercontinental attack. . They include intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and heavy bombers equipped with bombs and air-launched cruise missiles (ALCMs). Sea-launched cruise missiles (SLCMs) are also included because the range of their launch platforms gives them a potential for intercontinental attack.

16. The Soviet Union and the United States have, over the past year, continued to modernise their strategic forces. At the end of 1986 the Soviet Union had deployed 81 of its mobile ICBMs, the SS-25. And another ICBM, the SS-X-24, which is expected to carry ten warheads and may be deployed both in silos and on mobile launchers, is at an advanced stage of development. The capability of the Soviet SLBM force is being markedly improved as more of the new Typhoon and Delta class submarines (SSBNs) are deployed, with their SS-N-20 and SS-N-23 missiles. There are two submarine-launched land-attack cruise missiles in development, the SS-NX-21 and the larger SS-NX-24. The SS-NX-21 (with a range of over 2,500 km) is expected to be deployed in the near future from a variety of submarines. The number of ALCMs in the inventory is increasing, with the entry into service of more of the new variant of the Bear bomber. Development of the new strategic aircraft, the Blackjack, is well under way.

17. The Soviet Union continues to improve its ground-based radars and space sensors for ballistic missile detection and threat assessment. It is also continuing research and development with potential application to ballistic missile defence.

18. As part of its strategic force modernisation programme, the United States has begun to deploy the B1 bomber and the new ten-warhead MX ICBM. The eighth US Trident submarine with C4 missiles is now on sea trials, and by the end of the decade the US SLBM capability will be further improved with the introduction into service of the D5 Trident SLBM. Engineering design work on a single-warhead mobile ICBM is in progress. The effectiveness of the B52

Calculating the Nuclear Balance

1. Many similar problems apply in calculating the nuclear as the conventional balance. Factors such a- relative accuracy, reliability, reaction time and survivability are difficult to quantify, not least since detailed information about capabilities is seldom disclosed. The location, mobility and vulnerability of weapon systems, and the existence of defensive forces, are further complicating factors.

2. So again a straight number count has the merit of providing an objective basis against which judgements can be exercised. But there are still problems about what to count. It might be more realistic to consider warheads rather than weapon systems, but:

- many strategic missiles are capable of carrying varying numbers of multiple independently-targetable re-entry vehicles (MIRVs), and although we know the maximum number of warheads a missile is able to carry, we do not know how many are actually carried;
- aircraft can carry a variety and variable number of weapons:
- most shorter-range missiles and all artillery pieces can be re-loaded; we do not know how many re-loads are available;
- most aircraft, shorter-range missiles and artillery are dual-capable, and many could be armed with conventional instead of nuclear warheads.

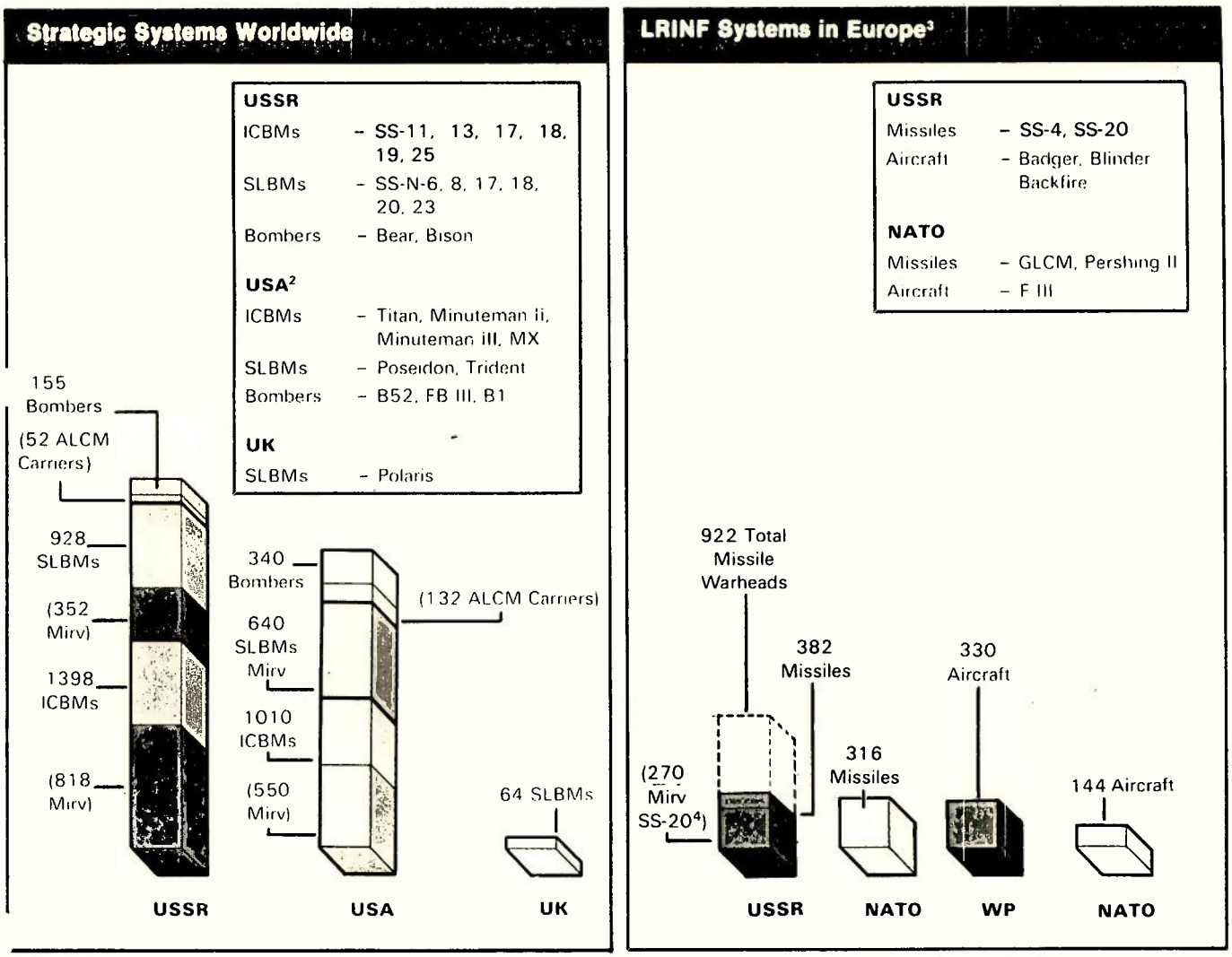
The comparisons we make are therefore mostly based on launcher numbers, except for longer-range intermediate nuclear forces, for which an approximate balance can be shown.

3. There remains the problem of comparing like with like. Our division of nuclear systems into categories is to some extent arbitrary, and the Soviet Union normally uses different terminology. But our approach broadly reflects the varying capabilities and roles of different systems and is in line with the categories generally used in arms control negotiations and agreements.

bomber force is being enhanced as the aircraft are modified to carry ALCMs. Development programmes for an advanced-technology bomber and an advanced cruise missile are under way. Both are planned to incorporate stealth technology. SLCMs are being deployed on a variety of ships and submarines.

between the two sides' forces. For example, the Soviet Union — with a preponderance of ICBMs and three times the missile throw-weight available to the United States — could successfully attack all US land-based missiles while keeping part of its ICBM force intact. On the other hand, half the US warheads are deployed on SLBMs which,

Figure 15 The Balance of Strategic and LRINF Systems — end 1986[1]



Notes

[1] French systems are not included in this diagram. They comprise 96 SLBM, 18 S3 missiles and about 35 Mirage IV Bombers.

[2] The United States is also deploying SLCM on a variety of surface ships and submarines.

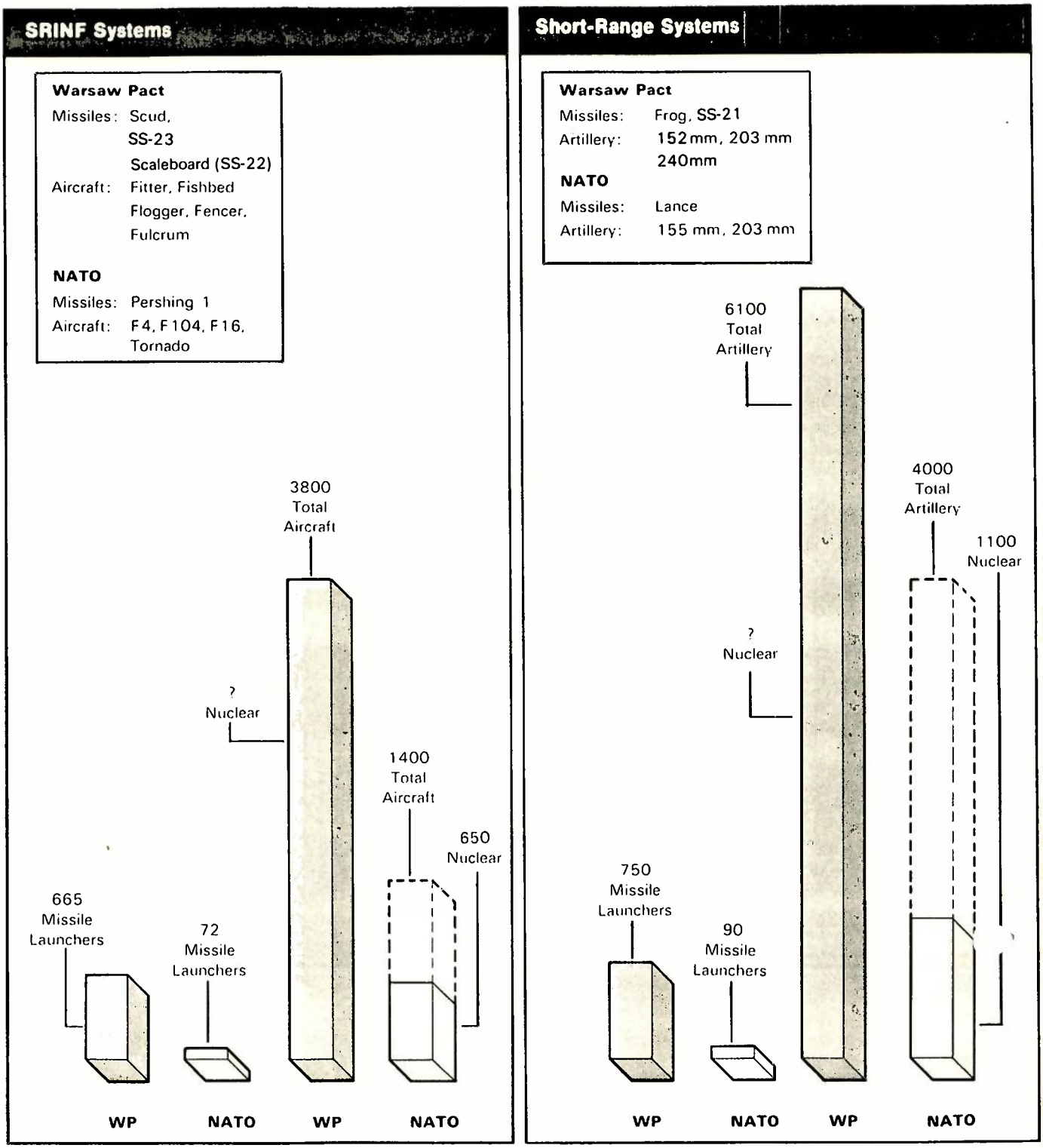
[3] Includes land-based systems in Europe from the Urals westward: excludes aircraft with a primary maritime role.

[4] Each SS-20 missile has three warheads.

19. Figure 15 illustrates the balance of strategic systems. The Soviet Union has more strategic delivery systems than the United States although, when aircraft-delivered weapons are included, the United States probably has the advantage, with some 11,500 warheads compared to 10,500 deployed by the Soviet Union. But as explained above it is very difficult to estimate the number of warheads deployed with any accuracy. Interpretation of the balance is further complicated by the asymmetry

though less accurate than ICBMs, are virtually invulnerable to a first strike, leaving the United States with a certain capability to retaliate. Finally, a comprehensive reckoning of the balance needs to take account of extensive Soviet strategic defences, both active and passive, including the anti-ballistic missile (ABM) system around Moscow (the only such operational system in the world), which is being upgraded.

Figure 16 The Balance of Shorter-Range Systems with Nuclear or Nuclear-capable Variants — end 1986[1, 2]



Notes

SRINF Aircraft. This diagram shows all aircraft of types known to have a nuclear-capable variant. On the NATO side, the number assigned to the nuclear role is indicated by the coloured part of the column. The other aircraft shown are not assigned to the nuclear role, and could not be so used. The Warsaw Pact does not disclose similar information about its own aircraft, and it is not possible to produce reliable estimates. All Warsaw Pact aircraft of types known to be nuclear-capable are therefore shown.

Short-Range Artillery. This diagram shows all artillery pieces of types known to have a nuclear-capable variant. On the NATO side, the number available for the nuclear role is indicated by the coloured parts of the column. The other artillery pieces included are not available for use in the nuclear role. Similar information is not available for Warsaw Pact systems.

[1] Includes land-based systems in Europe from the Urals westward.

[2] French systems are not included in this diagram. They comprise 65 Mirage IIIE and Jaguar aircraft and 30 Pluton missiles. The diagram does not include maritime systems.

Intermediate and Short-Range Nuclear Forces

20. Both NATO and the Warsaw Pact have a variety of systems that can deliver nuclear weapons at less than intercontinental range. Intermediate nuclear forces (INF) include all systems that fall between short-range and strategic, and can be sub-divided into longer-range and shorter-range intermediate nuclear forces (LRINF and SRINF), the former having a range in excess of about 1,000 km. Short-range nuclear forces include artillery and missiles with a range of less than about 150 km. They are sometimes known as 'battlefield' weapons.

21. The numbers of LRINF, SRINF and short-range forces shown in Figures 15 and 16 include only offensive land-based systems in Europe from the Urals westward. They exclude:

- aircraft and missiles based outside Europe, in the United States and eastern USSR;
- aircraft whose primary mission is maritime, such as those of the Soviet naval air forces and NATO aircraft with an anti-ship role;
- NATO sea-based nuclear systems, such as the Terrier surface-to-air missile, the ASROC and SUBROC anti-submarine missiles, air-delivered bombs and aircraft on US aircraft carriers;
- Warsaw Pact sea-based systems, such as SS-N-3, SS-N-7, SS-N-12 and SS-N-19 anti-ship cruise missiles, nuclear depth-bombs, surface-to-air missiles, and SS-N-5 non-strategic ballistic missiles on submarines deployed in the Baltic Sea; and
- air defence systems with a capability against air-breathing nuclear delivery systems. This is an area of massive Warsaw Pact superiority. They have, for example, almost 14,000 SAMs compared with NATO's total of about 2,000.

Intermediate Nuclear Forces

22. At the end of 1986 NATO had deployed 208 ground-launched cruise missiles (GLCM) and 108 Pershing II missiles in the United Kingdom, the Federal Republic of Germany, Italy and Belgium. No additional GLCMs have been deployed to the United Kingdom since the end of 1985, when the deployment of six flights of GLCMs at RAF Greenham Common was completed. Numbers of SS-20 missiles have remained at 441 but, with 112 SS-4 missiles and a total of 1,435 warheads, the Soviet Union retains a substantial superiority over NATO in weapons of this range. This is even more marked when aircraft, particularly the modern Backfire bomber, are included. Similarly at shorter ranges the Warsaw Pact has a clear numerical advantage. Its missiles are also being improved as Scaleboard missiles have been replaced over the past few years with a more accurate version (SS-22); and with the introduction late in 1985 of the SS-23, a new missile that provides an improved capability over the Scud, with longer range and greater accuracy. About 70 Scaleboard (SS-22) missiles are deployed west of the Urals; of these, up to 50 have been deployed in the German Democratic Republic and Czechoslovakia since 1984.

23. The Warsaw Pact also maintains far greater numbers of dual-capable aircraft which, like NATO's, are being modernised. A direct numerical comparison of SRINF aircraft numbers is, however, difficult. Unlike NATO, the Warsaw Pact does not disclose how many of its aircraft are assigned for nuclear operations; we have therefore included in Figure 16 all Warsaw Pact shorter-range aircraft of types that could deliver nuclear weapons. The number of NATO aircraft with a nuclear role, 650, is indicated by the coloured part of the column; the other aircraft shown, a further 750, are of similar types but are assigned for conventional use and would not be used in the nuclear role. These additional aircraft have been included for comparison purposes: even with their inclusion, the Warsaw Pact still has a marked advantage.

Short-Range Nuclear Forces

24. The capability of Warsaw Pact short-range missiles is also being improved as the SS-21 continues to replace the Frog missile. Improved artillery continues to be deployed. As with tactical aircraft, artillery systems may also be dual-capable, and, although we know how many NATO systems are available for use in nuclear operations, we cannot be sure how many Soviet systems could similarly be used. The numbers for Soviet artillery in Figure 16 therefore include all 1,600 newer versions of the 152mm artillery system, and the 203mm and 240mm pieces, as well as about 4,500 older 152mm guns, some of which may have a nuclear capability. On the NATO side all 155mm and 203mm artillery that could be used to deliver nuclear shells are shown in colour along with, for comparison purposes only, another 3,000 pieces of the same types that are not available for use in the nuclear role.

THE SOVIET SPACE PROGRAMME

25. The Soviet Union is continuing to improve its already broad military capability in space, encompassing surveillance, intelligence-gathering, communications, navigation and space-based R & D. Improved reconnaissance systems are believed to be under development in addition to a new global navigation system with greater accuracy than existing systems. The Mir space station and its associated modules will provide a flexible base for space R & D. New launch vehicles are being developed: a medium-lift vehicle that has already flown, and a heavy-lift vehicle and re-usable shuttle orbiter that have yet to be launched. There is continued heavy investment in space-related ground infrastructure which, coupled with the introduction of a much expanded space-launch/transportation capability, implies an even more rapid build-up in the future.

SOVIET DEFENCE EXPENDITURE

26. Soviet defence expenditure rose by about 50% in real terms between 1970 and 1985. The growth rate, which declined somewhat after the mid-1970s, picked up in the early 1980s, and since then has averaged about 3% a year. The published Soviet defence budget, a single line entry for defence, amounts to some 20 billion roubles in 1987, and implies that the Soviet Union maintains its military forces on outlays equivalent to little more than 2% of national output. But this is not credible, and our estimates show the defence burden to be about 13-15% of gross domestic product, substantially more by that measure than any NATO country. Current developments in the defence sector suggest that expenditure could rise by about 3% a year between now and 1990. If the economy does not perform as well as Mr Gorbachev hopes, there may be pressure to restrain the rise to below this level. Nonetheless, the high priority traditionally given to defence seems unlikely to be seriously challenged.

Strength of the Fleet

Table 1. Ships of the Royal Navy — Strength as at 1 April 1987 (i)

Serial (ii)	Type/Class	No.	Operational or engaged in preparing for service or trials or training	No.	Undergoing refit or on standby etc
1	**Submarines**				
	Polaris	4	*Resolution, Repulse, Renown, Revenge*		
	Fleet	12	*Warspite, Churchill, Conqueror, Courageous, Sovereign, Swiftsure, Superb, Splendid, Trafalgar, Turbulent, Tireless, Torbay+ (iii)*	3	*Valiant, Sceptre, Spartan*
	Oberon Class	9	*Orpheus, Odin, Onslaught, Otter, Opportune, Olympus, Otus, Ocelot, Onyx*	3	*Oracle, Osiris, Opossum*
	Porpoise Class	1	*Sealion*		
2	**ASW Carriers**	2	*Illustrious, Ark Royal*	1	*Invincible*
3	**Assault Ships**	1	*Intrepid+*	1	*Fearless*
4	**Guided Missile Destroyers**				
	County	1	*Fife*		
	Type 82	1	*Bristol*		
	Type 42	11	*Cardiff, Glasgow, Exeter, Birmingham, Southampton, Nottingham, Liverpool, Manchester, York, Gloucester, Edinburgh*	1	*Newcastle*
5	**Frigates**				
	Type 22	11	*Broadsword, Battleaxe, Brilliant, Brazen, Boxer, Beaver, Brave, London+, Sheffield*, Cornwall*, Coventry* (iv)*		
	Type 21	4	*Amazon, Arrow, Ambuscade, Active*	2	*Alacrity, Avenger*
	Leander Class	18	*Euryalus, Naiad, Penelope, Arethusa, Aurora, Phoebe, Sirius, Argonaut, Minerva, Danae, Andromeda, Hermione, Scylla, Achilles, Charybdis, Diomede, Apollo, Ariadne*	2	*Cleopatra, Jupiter*
	Rothesay Class	2	*Rothesay, Plymouth*		
	Navigation Training Ship	1	*Juno+*		
6	**Offshore Patrol**				
	Castle Class	2	*Dumbarton Castle, Leeds Castle*		
	Island Class	6	*Alderney, Guernsey, Lindisfarne, Orkney, Shetland, Anglesey*	1	*Jersey*

Serial	Type/Class	No.	Operational or engaged in preparing for service or trials or training	No.	Undergoing refit or on standby etc
7	**MCMVs**				
	Minesweepers	3	*Cuxton, Soberton, Upton*	2	*Stubbington, Walkerton*
	River Class	12	*Waveney, Carron, Dovey, Helford, Humber, Blackwater, Itchen, Helmsdale, Orwell, Ribble, Spey, Arun*		
	Minehunters Ton Class	11	*Brereton, Brinton, Bronington, Hubberston, Iveston, Kedleston, Kellington, Maxton, Nurton, Sheraton, Wilton*	2	*Kirkliston, Gavinton*
	Hunt Class	11	*Brecon, Brocklesby, Cattistock, Cottesmore, Dulverton, Middleton, Chiddingfold, Hurworth, Bicester, Atherstone+, Berkeley**	1	*Ledbury*
8	**Patrol Craft**				
	Bird Class	5	*Cygnet, Kingfisher, Peterel+, Sandpiper+, Redpole*		
	Coastal Training Craft	15	*Attacker+, Fencer+, Hunter+, Chaser+, Striker+, Archer+, Biter+, Smiter+, Pursuer*, Blazer*, Dasher*, Puncher*, Charger*, Ranger*, Trumpeter*(v)*		
	Peacock Class	5	*Peacock, Plover, Starling, Swallow, Swift*		
	Gibraltar Search and Rescue Craft	2	*Cormorant, Hart*		
9	**Support Ships**				
	Submarine Tender	1	*Wakeful*	1	*Sentinel*
	MCM Support Ship	1	*Abdiel*		
	Seabed Operations Vessel	1	*Challenger*		
10	**Royal Yacht/ Hospital Ship**			1	*Britannia*
11	**Training Ships**				
	Fleet Tenders	3	*Manly+, Messina+, Milbrook+*	1	*Mentor*
12	**Ice Patrol Ship**			1	*Endurance*
13	**Survey Ships**	8	*Bulldog, Fawn, Fox, Hecate, Herald, Gleaner, Hecla, Roebuck*	1	*Beagle*

Notes:

(i) This table includes ships due for completion or disposal during the course of 1987-88; numbers of each type are not, therefore, an accurate indication of the ships available at any one time. Ships solely engaged in harbour training duties are not included.

(ii) All Ships in serials 1—7 are assigned to NATO, or will be so assigned on becoming operational. Ships in remaining serials could be made available in support of NATO operations if national requirements permitted.

(iii) Ships marked + are engaged partly on trials or training.

(iv) Ships marked * were under construction on 1 April 1987 and are planned to enter service during 1987-88.

(v) Completion of Coastal Training Craft class delayed owing to contractual problems.

(vi) Ships approved during 1986-87 for disposal: Oberon, Walrus, Glamorgan, Leander, Galatea, Yarmouth, Alfriston, Bickington, Hodgeston, Bildeston, Bossington, Protector, Guardian, Hydra.

Table 2. Ships of the Royal Fleet Auxiliary — Strength at 1 April 1987

Serial	Type	No.	Operational or engaged in preparing for service or trials or training
1	**Fleet Tankers, Large**	4	*Olmeda, Olna, Olwen, Tidespring*
2	**Fleet Tankers, Small**	5	*Black Rover, Blue Rover, Grey Rover, Gold Rover, Green Rover*
3	**Support Tankers**	5	*Appleleaf, Bayleaf, Brambleleaf, Oakleaf, Orangeleaf*
4	**Fleet Replenishment Ships**	4	*Resource, Fort Austin, Fort Grange, Regent*
5	**Helicopter Support Ship**	1	*Engadine (i)*
6	**Landing Ships Logistic**	6	*Sir Bedivere, Sir Geraint, Sir Lancelot, Sir Percivale, Sir Tristram, Sir Caradoc (ii)*
7	**Forward Repair Ship**	1	*Diligence*

Notes:

(i) RFA *Engadine* is engaged in training and will be replaced by RFA *Argus* (ex *Contender Bezant*) on completion of her conversion as an Aviation Training Ship.

(ii) *Sir Caradoc* is an interim replacement for *Sir Galahad* (due to come into service in 1987).

Table 3. Royal Marines Commando Forces (i)

Serial	Type	No.
1	**Headquarters**	
	Commando Brigade Headquarters RM (incl Air Defence Troop)	1
2	**Commandos**	
	RM Commandos	3
3	**Artillery**	
	Commando Regiment RA	1
	Commando Battery RA (Volunteer)	1
4	**Engineers**	
	Commando Squadron RE	1
	Commando Squadron RE (Volunteer)	1
5	**Light Helicopter Support**	
	Brigade Air Squadron RM	1
6	**Logistics Units**	
	Commando Logistic Regiment RM	1
7	**Special Boat Squadron**	
	Squadron RM	1
8	**Assault Squadrons** (Landing Craft)	1
9	**Mountain and Arctic Warfare Cadre**	1

Note:

(i) Table does not include Royal Marines detachments on board Royal Navy ships.

Table 4. Naval Aircraft

Serial	Role	Aircraft	Squadron No
1	**Air Defence/Recce/Attack**	Sea Harrier FRS1	800 801
		Sea Harrier FRS1/ Harrier T4	899
2	**Anti-Submarine**	Sea King HAS 5	810 814 819 820 824 826(ii) 706
		Wasp HAS 1	829(ii)
3	**Anti-Submarine/ Anti-Ship**	Lynx HAS 2/3	815(ii) 829(ii) 702
4	**Airborne Early Warning**	Sea King AEW 2	849(ii)
5	**Commando Assault**	Sea King HC 4	845 846 707
6	**Aircrew Training**	Gazelle HT 2 Jetstream T 2/3 Chipmunk	705 750 -
7	**Fleet Support Search and Rescue**	Wessex HU 5	771 772
8	**Fleet Training and Support**	Hunter T8/GA11 Canberra TT18	- -
9	**Support**	Sea Devon Sea Heron	- -

Notes:

(i) All the above aircraft are declared to NATO, or could be made available in support of NATO operations.

(ii) Aircraft in these squadrons are deployed in flights of single and multiple aircraft.

Strength of the Army

Major Combat Headquarters

	BAOR	Berlin	Elsewhere	UK
Headquarters				
Corps Headquarters	1			
Armoured Divisional Headquarters	3			
Infantry Divisional Headquarters				1
Brigade Headquarters	9(i)	1	1(ii)	21(iii)

Combat Arm Major Units (iv)

	Regular Army				TA
	BAOR	Berlin	UK	Elsewhere	UK
Armour					
Armoured Regiments	11		3(v)		
Armoured Reconnaissance Regiments	2		3		5(vi)
Artillery (vii)					
Field Regiments	8		6(viii)		2
Heavy Regiments	1				
Missile Regiments	1				
Depth Fire Regiments (incl locating capability)	2				
Air Defence Regiments	2		1		4
Locating Regiments			1		
Engineers					
Engineer Regiments	5		5	1(ix)	7
Armoured Engineer Regiment	1				
Amphibious Engineer Regiment	1				
Infantry					
Battalions	13	3	31	3	40(x)
Gurkha Battalions			1	4	

	Regular Army				TA
	BAOR	Berlin	UK	Elsewhere	UK
Special Air Service					
Regiments			1		2
Army Air Corps (xi)					
Regiments	3		1(xii)		
Honourable Artillery Company					
Regiment					1

Notes:

(i) Includes an Artillery Brigade Headquarters.

(ii) 48 (Gurkha) Infantry Brigade.

(iii) Includes three Engineer Brigade Headquarters.

(iv) Normal deployment locations as at 1 April 1987 are shown: no account is taken of temporary or emergency deployments.

(v) Includes regiments at Bovington and Catterick.

(vi) Two armoured reconnaissance regiments and three light reconnaissance regiments.

(vii) Artillery unit equipments consist of:

Field Regiments — depending on role, 105 mm light guns, 105 mm Abbot self-propelled (SP) guns, 155 mm FH70 towed howitzers and 155 mm M109 SP guns;

Heavy Regiment — 8 inch howitzers;

Missile Regiment — Lance;

Depth Fire Regiments — 175 mm self-propelled guns;

Air Defence Regiments — Rapier and Blowpipe/Javelin.

(viii) Includes one Commando regiment, one parachute regiment and the Royal School of Artillery Support Regiment.

(ix) The Queen's Gurkha Engineers.

(x) Includes five battalions formed under the TA Phase II expansion.

(xi) Aircraft types are: Beaver, Alouette, Scout, Lynx, Gazelle.

(xii) Includes one TA Squadron.

Strength of the Royal Air Force

Front-line Units (i)

Serial	Role	Aircraft or Equipment	UK	RAF Germany
1	**Strike/Attack**	Tornado GR1	27 Squadron 617 Squadron	9 Squadron 14 Squadron 15 Squadron 16 Squadron 17 Squadron 20 Squadron 31 Squadron
		Buccaneer	12 Squadron 208 Squadron	
2	**Offensive Support**	Harrier	1 Squadron	3 Squadron 4 Squadron (ii)
		Jaguar	6 Squadron 54 Squadron	
3	**Maritime Patrol**	Nimrod MR	42 Squadron 120 Squadron 201 Squadron 206 Squadron	
4	**Reconnaissance**	Canberra PR9 Jaguar	1 PRU (iii) 41 Squadron	2 Squadron
5	**Air Defence**	Lightning	5 Squadron (iv) 11 Squadron (iv)	
		Phantom FG1	43 Squadron 111 Squadron (iv)	
		Phantom FGR2	29 Squadron 56 Squadron (iv)	19 Squadron (iv) 92 Squadron (iv)
		Phantom F4J	74 Squadron (iv)	
		Bloodhound	25 Squadron (iv) 85 Squadron (iv)	
		Rapier	27 Squadron RAF Regiment (iv) 48 Squadron RAF Regiment (iv)	16 Squadron RAF Regiment (iv) 26 Squadron RAF Regiment (iv) 37 Squadron RAF Regiment (iv) 63 Squadron RAF Regiment (iv)
		Skyguard	2729 (City of Lincoln) Squadron R Aux AF (v)	
6	**Airborne Early Warning**	Shackleton	8 Squadron	

Serial	Role	Aircraft or Equipment	UK	RAF Germany
7	**Air Transport**	VC10	10 Squadron	
		Hercules	24 Squadron 30 Squadron 47 Squadron 70 Squadron	
		HS125/Andover	32 Squadron	
		Pembroke		60 Squadron
		Chinook Helicopters	7 Squadron	18 Squadron
		Wessex Helicopters	72 Squadron	
		Puma Helicopters	33 Squadron	230 Squadron
8	**Tankers**	Victor K2	55 Squadron	
		VC10K2/3	101 Squadron	
		Tristar K1	216 Squadron	
9	**Search and Rescue**	Sea King Helicopters	202 Squadron	
		Wessex Helicopters	22 Squadron	
10	**Ground Defence**	Light Armour/Infantry Weapons	2 Light Armour Squadron RAF Regiment 15 Light Armour Squadron RAF Regiment 51 Light Armour Squadron RAF Regiment 58 Light Armour Squadron RAF Regiment 2503 (County of Lincoln) Field Squadron R Aux AF Regiment (iv) 2620 (County of Norfolk) Field Squadron R Aux AF Regiment (iv) 2622 (Highland Field Squadron) R Aux AF Regiment 2623 (East Anglian) Field Squadron R Aux AF Regiment 2624 (County of Oxford) Field Squadron R Aux AF Regiment 2625 (County of Cornwall) Field Squadron R Aux AF Regiment	1 Squadron RAF Regiment

Notes:

(i) This table shows normal deployment locations as at 1 April 1987. All front-line aircraft, together with certain training and communications aircraft, are assigned to NATO or could be made available in support of NATO operations. Additionally, at 1 April 1987 normal deployment outside the NATO area was as follows:

a. Falkland Islands. Phantoms, Hercules, Chinook helicopters, Sea King helicopters and Rapier. Hercules aircraft are also deployed to Ascension Island for the Falkland Islands airbridge.

b. Cyprus. One squadron of Wessex helicopters and one RAF Regiment squadron.

c. Hong Kong. One squadron of Wessex helicopters.

d. Belize. One flight of Harriers, one of Puma helicopters and a half squadron of RAF Regiment.

(ii) Also has Reconnaissance role.

(iii) PRU - Photo Reconnaissance Unit.

(iv) These are forces under NATO command.

(v) R Aux AF - Royal Auxiliary Air Force.

Index

References in Roman type are to paragraph numbers and annexes.
References in bold type are to boxed passages and are by page number.

A

A129 helicopter: Table 8
AA-10 missile: Annex A
Ada Project Support Environment: Table 8
Aden: **22**
Advanced Sea Mine: Table 8
Advanced Short-Range Air-to-Air Missile (ASRAAM): Table 8
Aeroplane and Experimental Research Establishment: 631
Afghanistan: 106, **6**
Africa: **6**
AIDS: **59**
Airborne Radar Demonstrated System: Table 8
Airborne Warning and Control System: 421, Table 1, Table 3
Air Traffic Control Radars: Table 4
Air Transport Force: **23**
Akula class submarine: Annex A
Aldermaston: **58**
Allied Command Europe: **13**, **27**
Allied Command Europe Mobile Force (Land): 411
Ammunition, 120mm: Table 1
Antartica: **23**
Anti-Ballistic Missile (ABM) system: **39**, Annex A
Anti-Ballistic Missile (ABM) Treaty: 202, 206-7, 209, 216, **40**
Anti-submarine warfare (ASW): 408, 420, **39**
Ariadne, HMS: 427
Ark Royal, HMS: 422
Armoured division equivalents (ADE): Annex A
Army Air Corps: 413
Asia: **6**, 206
ASROC missile: Annex A
Australia: **36**, Table 5
Auxiliary Oiler Replenishment Vessels (AOR): 408, Table 1, Table 2
Aviation support ship: 406
Aviation training ship: Table 1

B

B1 aircraft: Annex A
B52 aircraft: Annex A
Backfire aircraft: Annex A
BAe 146 aircraft: Table 1, Table 4
Ballistic Missile Early Warning System: 419, 632
Barra sonobuoys: Table 8
Barrow: **38**
Battlefield Artillery Target Engagement System (BATES): Table 1
Bear aircraft: Annex A
Belgium: **13**, **16**, 410, Table 5, Annex A
Belize: **22**, 427
Benelux countries: Annex A
Biological Weapons Convention: 220
Blackjack aircraft: Annex A
Bloodhound missile: 419
BMP-2 infantry combat vehicle: Annex A
Boeing E3A aircraft: Table 1, Table 4
Brazil: Table 5
British Army Equipment Exhibition: **49**
British Army of the Rhine (BAOR): 409, 415, 423, 605
Broadbent Report: **58**
Brunei: **22**
Brussels Declaration, the: 217-8
Brussels Treaty, the: **16**
BTR-80 armoured personnel carrier: Annex A
Buccaneer aircraft: 420, 422
Budapest Appeal, the: 217
Bulgaria: **5**

C

Camp David: 102, 201, 209, Annex A
Canada: **31**, **36**, Table 5
Caribbean: **23**
Carrington, Lord: **2**
Central America: **6**
Cerezo, President: **23**
Challenger Armoured Repair and Recovery Vehicle (ARRV): Table 1
Challenger tank: 415, Table 1, Table 3, Annex A
Chemical Agent Monitor: 516, Table 3
Chemical Defence Establishment: 516, 631
Chemical warfare (CW): **10**
Chemical weapons: 102, 209-10, **10**
China, People's Republic of: **22**
Chinook helicopter: 418, 422, Table 1
Churchill, Sir Winston: **2**, **19**
Close-in Weapons System: Table 2
Clyde Submarine Base: **38**, 632
Coastal Survey Vessel: Table 1, Table 2
Coastal Training Craft: Table 1
Cologne: 410
Command System for Submarines: Table 6
Communications System: Table 4
Comprehensive Test Ban (CTB): 213-5
Conceptual Military Framework: 312, 511
Conference of National Armament Directors (CNAD): 512
Conference on Disarmament (CD): 213, **10**, Fig 3
Conference on Disarmament in Europe (CDE): **12**, Fig 3
Conference on Security and Cooperation in Europe (CSCE): **12**, Fig 3
Confidence and Security-Building Measures in Europe: 101, 217, **12**, Fig 3
Conventional Defence Improvements (CDI): 312, **17**
Counter Battery Radar (COBR Table 8
Cruise missile: 208, **14**, 632
  Air-launched cruise missile (ALCM): **42**, Annex A
  Ground-launched cruise missile (GLCM): 107, Fig 1, Annex A
  Sea-launched cruise missile (SLCM): **41**, Annex A
Cyclone Namu: 427
Cyprus: **22**

D

Defence:
  budget: 601-3
  estate: 624-5
  public relations: 631-3
  research: 514-23
Defence Engineering Service (DES): 617, **57**
Defence Export Services Organisation (DESO): **49**
Defence Medical Services: 622
Defence Planning Committee: 209, 311, 314, **17**
Defence Planning Questionnaire: 311
Defence Technology Enterprises Ltd (DTE): 518
Defense Authorisation Act: 512
Delta class submarine: Annex A
Demountable Rack Off-Load and Pick-Up System (DROPS): 415
Denmark: 411, 631, Table 5
Department of Education and Science: 517
Department of Health and Social Security (DHSS): **59**
Department of Trade and Industry: 519
Department of Transport: **27**, **33**
Diesel Generating Set: Table 7
Doppler navigation equipment: Table 7

E

Eastern Atlantic and Channel: 303, 401, 404, 416

EH 101 helicopter: 408, 421, Table 8
Eisenhower, President: **18**
Electronic countermeasures (ECM): Annex A
El Salvador: **31**, 427
Equipment collaboration: 308, 509-12, Table 8
Estonia: **5**
Eurogroup: 102, 209, 307
European Fighter Aircraft: Table 8
European Recovery Programme: **18**
European Staff Targets: 511
Executive Responsibility Budgets (ERBs): 608-9
Exercises: 422-3 Table 5
BOLD GUARD: 422, 631, Table 5
HILEX 12: 422, Table 5
KEYSTONE: 423
NORTHERN WEDDING: 422, Table 5
PURPLE WARRIOR, 423
RIMPAC 86: **36**, Table 5
SAIF SAREEA: **21**, 416, 422, **36**, 631, Table 5
Explosive Ordnance Disposal (EOD): 425

F-15 aircraft, Annex A
Falkland Islands: **20**, **27**, 601, 603
Falkland Islands Patrol Vessel: Table 1
Faslane: **38**
Fearless, HMS: 406
FH 70: Table 8
Financial and Management Information System: 616
Financial Management Development Unit: 611
Financial Management Initiative: 606
Financial Planning and Management Group (FPMG): 611
Finland: **5**
Five Power Defence Agreement (FPDA): Table 5
Flanker aircraft: Annex A
Foreign Secretary, the: 116
France: 212, **16**, 422, **42**, Table 5
Frog missile: Annex A
Frogfoot aircraft: Annex A
Fulcrum aircraft: Annex A
Full-Width Attack Mine Fuze: Table 1

G

Gazelle helicopter: Table 8
General Service Units: 413
Geneva: 203, 205, **10**, 220, Fig 3
Germany, East (Democratic Republic): 106, **5**, Annex A
Germany, Federal Republic of: **13**, **16**, **22**, 410, **31**, 416, 422, Table 5, 631, Annex A
Gibraltar: 303
Gleneagles: 314
GLOBAL 86: **36**, 631
Golan heights: **24**
Gorbachev, M.S.: 101, 104-5, 110, **4**, 202-3, 205, 210-11, **16**, Annex A
Greece: **13**
Guatemala: **23**
Gulf states: **22**
Gurkha Rifles, 2/7th: **22**

H

Halifax: 217
Harrier aircraft: 418, 421-2, **31**, Table 1, Table 4, Table 8
Hawk aircraft: 422
Helsinki Final Act, the: **12**, Fig 3
Herald of Free Enterprise: 427
Hind helicopter: Annex A
Hitler, Adolf: **5**, **18**
Home Department: **58**
Home Service Force: 413
Hong Kong: **22**
Hong Kong Patrol Craft: Table 1
House of Commons, the: 406
House of Commons Defence Committee: **58**
HS 125 aircraft: Table 1
Hungary: 106, **5**
Hunt Class MCMV: Table 1, Table 2
Hurworth, HMS: 427
Hydra, HMS: **33**
Hydrographic Service: **33**

I

Ice Patrol Ship: **23**
Ikara Anti-Submarine Weapon: Table 8
Illustrious, HMS: 422, **36**
Independent European Programme Group (IEPG): 308, 511
Intercontinental ballistic missile (ICBM): Annex A
Intermediate-range nuclear forces (INF): 102, 204, 206-9, 210, Fig 2, Annex A
Intrepid, HMS: 406, 422
Iran: **10**
Iraq: **10**
Ireland: 426
Italy: **13**, **16**, Table 5, Annex A

J

Jaguar aircraft: 418, 422, Table 8
Jamaica: 427
Japan: **36**, Table 5
Javelin missile-launcher: Table 1
Jetstream aircraft: Table 1, Table 2
JP 233 cratering and area-denial weapon: 421

K

Kenya: **31**
Kiev class aircraft carrier: 108
Kilo class submarine: Annex A
King's Bay, Georgia: **38**
Kirov class guided-missile cruiser: Annex A
Kowloon Brigade: 426

L

Lancaster aircraft: **47**
Lance missiles: **13**, 409
Landing Ships Logistic: 406, Table 1
Latvia: **5**
Lebanon: **22**
Lenin: **5**
Leopard II tank: Annex A
Lightning aircraft: 422
Light Anti-Tank Weapon for the 80s (LAW 80): Table 1, Table 3
Lithuania: **5**
Logistic vehicles: Table 1
London: 116
Long-range stand-off missile (LRSOM): Table 8
Longer-range intermediate nuclear forces (LRINF): 107, 204, 206, 208, Annex A
Lord President of the Council, the: 116
Luxembourg: **16**
Lynx helicopter: Table 1, Table 3, Table 8

M

M483A1 Artillery Shell: Table 8
M5 missile: **42**
Madrid Concluding Document, the: **12**, Fig 3
Mainstay aircraft: Annex A
Malaysia: Table 5
Manpower division equivalents (MDE): Annex A
Martel missile: Table 8
Marx: **4**
Marxist-Leninist ideology: 105, **4**
Mary Rose: 625
Merchant shipping: **27**
Meteorological Office: 627-30
Metropolitan Police: **58**
Midas aircraft: Annex A
Midge drone: Table 8
Milan missile: Table 8
Military Survey Service: **33**
Mine countermeasures (MCM): 405, 407
Mine countermeasures vessels: Table 1, Table 2
MINIS management information system: 607, 609
Ministry of Defence Police (MDP): **58**
Mir space station, Annex A
Montebello: **14**
Mortar, 51 mm: Table 1
Moscow: 116, 201, 210, Annex A
Mountain Rescue Teams (MRT): 426
Multifunctional Information Distribution System: Table 8
Multiple Launch Rocket System (MLRS): Table 1, Table 8
Mutual and Balanced Force Reductions (MBFR) talks: 219
MX missile: Fig 2, Annex A

N

NATO Foreign Ministers: 217
NATO frigate replacement: 408, Table 8
NATO Identification System: Table 8
Nazi-Soviet Pact: **5**
Netherlands, the: **13**, **16**, 410, Table 5
New Zealand: Table 5
Nimrod Airborne Early Warning aircraft: **44**, 508
Nimrod Mk2 aircraft: 420, 422, 426
North Atlantic Council: 209
North Atlantic Treaty: 103, 302, **18**
North Atlantic Treaty Organisation (NATO): 101-2, 104, 106-9, 111-7, **5**, 202, 208-9, **10**, 211, 217-9, **13**, 301-4, **16**,

312-3, **17**, **18**, **22**, 404-5, **27**, 409, 418, **33**, 422, **39**, 512, 521, Table 5, Annex A
Northern Army Group (NORTHAG): 410, 415, 417
Northern Ireland: 414, **31**
Norway, 406, **31**, Table 5
Nuclear and Space Talks (NST): Fig 3
Nuclear Planning Group (NPG): 313-4
Nuclear-powered Fleet submarine: Table 1, Table 2
Nunn Amendment: 512-3, Table 8

O

Odense: 307
Offshore Patrol Vessels: Table 1
Oman: 416, 422, Table 5, 631
Orfordness: 425
Oscar class submarines: Annex A
Ostend: 427

P

Parachute Regiment, 2nd Battalion: 427
Paris Sonar: Table 8
Patriot surface-to-air missile: Annex A
Patrol craft: Table 1
Pegasus engines: **44**
Pepys, Samuel: **58**
Pershing missile: **13**, Fig 1
Pershing II missile: 107, 208, Fig 2, **14**, Annex A
Phantom aircraft: 418, 422, Table 1
Phoenix Remotely-Piloted Vehicle: Table 1
Pitcairn Island: **22**
Poland: 106, **5**, Annex A
Polaris strategic deterrent: 403, **39**
Portsmouth Naval Base: 625
Portugal: Table 5
Poseidon submarine: **13**
Prime Minister, the: 102, 116, 201, 209, 210, **18**, Annex A
Procurement Executive (PE): 501-2, 505, **49**
Ptarmigan Digital Communications: Table 1
Public Expenditure Survey: 603
Public Expenditure White Paper: 601
Public relations: 631-3
Puma helicopter: 418, 421-2, 427, Table 8

Q

Quartermaster General's Department: 610
Queen's Gurkha Engineers: 427

R

RAF Aeronautical Information Documents Unit: **33**
RAF Akrotiri: **23**
RAF Brawdy: 426
RAF Fylingdales: 419, 632
RAF Greenham Common: 631, Annex A
RAF Molesworth: 632
RAF Shawbury: 605
RAF Strike Command: 419
Rapier missile: 418, 419, Table 1, Table 3
Rapier 2000 missiles: 415, Table 1, Table 3
Reagan, President: 101-2, 104, 201, 203, 205, 207, 209, 214, **16**, Annex A
Red Arrows: **23**
Reykjavik: 101-2, 201, 205, 209, 211, 215, **16**, Annex A
River Class MCMV: Table 1, Table 2
RNAD Coulport: **38**
Roebuck, HMS: **33**
Romania: **5**
Royal Air Force Reserve: **37**
Royal Aircraft Establishments: 516, 520
Royal Army Ordnance Corps: 425
Royal Australian Navy: **36**
Royal Corps of Signals: 427
Royal Dockyards: 605, 620-1
Royal Engineers: **22**, 413, **31**, **33**, 425
Royal Fleet Auxiliary: **22**
Royal Hong Kong Police: **22**
Royal Marines Reserve: 407
Royal Military College of Science: **37**
Royal Naval Auxiliary Service: 407
Royal Naval College: **37**
Royal Naval Engineering College: **37**
Royal Naval Museum: 625
Royal Naval Reserve: 407, **37**
Royal Navy Equipment Exhibition: **49**
Royal Netherlands Navy: 427
Royal Ordnance plc: 529
Royal Ulster Constabulary: 414, **31**
RTM 322 helicopter engine: Table 8

S

S10 Respirator: 415, Table 1, Table 3
SA-10 surface-to-air missile: Annex A
SA 80 infantry weapons: 415, Table 1, Table 3
Sandown Class SRMH: Table 1
Satellite communications terminal: Table 7
Saudi Arabia: **49**
Saxon armoured personnel carrier: 415, Table 1, Table 3
Scaleboard (SS-22) missile: 107, 208, Annex A
Scorpion reconnaissance vehicle: Table 8
Scotland, 314, 423
Scout helicopter: 413
Scud missile: Fig 1, Annex A
Sea Gnat Decoy System: Table 8
Sea Harrier aircraft: 408, Table 1
Sea King helicopter: 426-7, Table 1, Table 2
Seabed Operations Vessel: Table 1
Second Allied Tactical Air Force (2 ATAF): 417
Security: 618-9
Security Commission Report: 619
Service Contract Scheme: 615
Service Training: **37**
Shackleton aircraft: 421
Ships Low-Cost Inertial Navigation System: Table 8
Shorter-range intermediate nuclear forces (SRINF):, 208, Annex A
Short-range anti-radiation missile (SRARM): Table 8
Short-range nuclear forces: 107, Fig 2, Annex A
Sidewinder missile: Table 8
Sierra class submarine: Annex A
Sinai: **24**
Singapore: **36**, Table 5
Sir Galahad: 406
Skyguard: 419
Skynet 4 satellite: **49**, Table 1
Slava class guided-missile cruiser: Annex A
Small Firms Initiative: **45**
Solomon Islands: **31**, 427
Sonar 2050: Table 2
Sonar 2054: Table 2
South America: **6**
South Atlantic: **23**
Sovereign Base Areas (SBAs): **22**
Soviet Defence Expenditure: Annex A
Soviet Foreign Minister: 116
Soviet Navy: 108
Soviet Northern Fleet: 404
Soviet Party Congress:
Soviet space programme: Annex A
Soviet Union: 104-5, 107, 109-10, 113, **4**, 202, 207, 214-5, **10**, **13**, **18**, **22**, Annex A
Sovremenny class guided-missile destroyer: Annex A
Spain: Table 5
SP 70: Table 8
SS-4 missile: Annex A
SS-20 missile: 107, 208, Annex A
SS-21 missile: 107, Annex A
SS-23 missile: 107, 208, Fig 1 Annex A
SS-25 missile: Annex A
SS-N-3 missile: Annex A
SS-N-5 missile: Annex A
SS-N-7 missile: Annex A
SS-N-12 missile: Annex A
SS-N-19 missile: Annex A
SS-N-20 missile: Annex A
SS-N-23 missile: Annex A
SS-N-21 missile: Annex A
SS-NX-24 missile: Annex A
SS-X-24 missile: Annex A
Staff Responsibility Budgets (SRBs): 608
Starstreak High Velocity Missile: 75, Table 1, Table 3, Table 6
Stockholm: 217
Stockholm Document, the: **12**
Strategic Arms Limitation Treaty II (SALT II): **12**, Annex A
Strategic Defence Initiative (SDI): 202, 207, 209, 216, **19**, 504, 524-8
Strategic Defence Initiative Participation Office (SDIPO): 524-5
Strategic nuclear deterrent: 403
Strategic nuclear forces: Fig 2, Annex A
Striking Fleet Atlantic: 404
Submarine-launched ballistic missile (SLBM): Annex A
SUBROC missiles: Annex A
Surface-to-air missile (SAM) systems: Annex A
Surface-to-surface ballistic missile (SRBM): Annex A

T

T-64B tank: Annex A
T-80 tank: Annex A

TDHSI 2: Table 2
Thermal imagers: Table 2, Table 3
Technology Demonstrator Programmes: 511
Terrier missile: Annex A
Territorial Army (TA): 409, 412-3, **37**, 427
Theatre nuclear weapons: 107, **13**, 302, 416
TOPMAST management information system: 505
Tornado aircraft: 416, 418, 420, 422, Table 1, Table 4, Table 8, **47**, **49**, Annex A
Trafalgar class submarine: Table 7
Treasury, HM: 504
Trident strategic deterrent: 209, **38**, Table 1, Table 2, **39**, Annex A
TRIGAT missile: Table 8
Tristar aircraft: Table 3
Truman Doctrine, the: **18**
Truman, President: **19**
Tucano aircraft: Table 1
Turkey: **13**
Type-22 frigate: 408, Table 1, Table 2
Type-23 frigate: 408, Table 1, Table 2
Type-42 destroyer: 408
Type 2400 diesel-electric submarine: Table 1
Typhoon class submarine: Annex A

U

Udaloy class guided-missile destroyer: Annex A
UK Air Defence Ground Environment: 421
Ulster Defence Regiment (UDR): 414
United Kingdom: 202, 207, 211-12, 214, 216, **10**, 219, **13**, 302-3, 306, **16**, **18**, **22**, 401, 405, 407, **27**, 409, 412, **31**, 416, 419, 422, 427, **38**, **49**, 526, Annex A
United Kingdom Mobile Force (UKMF): 411, 422
United Kingdom/Netherlands Amphibious Force: 404, 407, 422
United Nations:
United Nations General Assembly: 213
United States: 202-6, 209, 214, 216, **10**, **13**, **39**, Table 5, **49**, 521,
Upholder-class submarine: 408
US Air Force: **13**
US armoured division: Annex A
US Army: **13**
US Government: **18**, 419
US Navy: Annex A
US Senate: 213

V

Vanguard, HMS: **38**
VC-10 aircraft: Table 1, Table 7
Venice: **16**
Victory, HMS: 625
Vienna: 219

W

Warrior, HMS: 625
Warrior mechanised infantry combat vehicle (MICV): 415, Table 1
Warsaw Pact: 108-9, 111, **10**, 217-8, **14**, 418, **39**, Annex A
Wavell ADP system: Table 1
West Indies: **23**
Western European Union: **16**

Z

Zeebrugge: 427
Zimbabwe: **31**

601101/4200/5/87 Designed by CS(Graphics)2e MOD Printed by CS(Rep S)LP Eastcote

HMSO publications are available from:

HMSO Publications Centre

(Mail and telephone orders only)
PO Box 276, London SW8 5DT
Telephone orders 01 622 3316
General inquiries 01 211 5656

HMSO Bookshops

49 High Holborn, London, WC1V 6HB 01 211 5656 (Counter service only)
258 Broad Street, Birmingham, B1 2HE 021 643 3757
Southey House, 33 Wine Street, Bristol, BS1 2BQ (0272) 24306/24307
9-21 Princess Street, Manchester, M60 8AS 061 834 7201
80 Chichester Street, Belfast, BT1 4JY (0232) 238451
13a Castle Street, Edinburgh EH2 3AR 031 225 6333

HMSO's Accredited Agents

(see Yellow Pages)

And through good booksellers

ISBN 0 10 101012 5

M32/88

Statement on the Defence Estimates 1988 2

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1988

LONDON
HER MAJESTY'S STATIONERY OFFICE
£5.80 net

Cm 344-II

Statement on the Defence Estimates 1988

2

DEFENCE STATISTICS

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1988

LONDON
HER MAJESTY'S STATIONERY OFFICE

£5.80 net

Cm. 344-II

Contents

		Page
1	Introduction	4
1.1	Summary	5
1.2	Strength of the Armed Forces	6
1.3	Merchant vessels available for defence purposes	7
1.4	UK Merchant Fleet: Manpower	7
2	Finance and trade	
2.1	The Defence budget and its relation to defence expenditure	8
2.2	Principal headings of the Defence budget	9
2.3	Analysis of the Defence budget by programme	10
2.4	Works buildings and land: Departmental responsibilities	11
2.5	Defence expenditure in the UK: estimated breakdown by industry group	11
2.6	Defence balance of payments: invisible transactions	12
2.7	Exports of defence equipment	13
2.8	Imports of defence equipment	13
2.9	Contracts placed: analysis by type of contract	14
2.10	UK-based contractors paid £5 million or more by MOD in 1986-87	15
3	Equipment	
3.1	Equipment procurement expenditure	16
3.2	Major equipment projects	17
3.3	Defence research and development expenditure	18
3.4	Defence production expenditure	19
3.5	Service supply systems: major stockholdings	20
3.6	Defence energy consumption	21
3.7	Royal Dockyards	22
4	Manpower	
4.1	Total MOD strength by area	23
4.2	Analysis of Service personnel by programme	24
4.3	Analysis of civilian staff by programme	25
4.4	Strengths of UK Regular Forces	26
4.5	Strengths of trained UK Regular Forces	27
4.6	Strengths of the Reserves and Auxiliary Forces	28
4.7	Strengths of locally entered personnel	29
4.8	Strengths of Cadet Forces	29
4.9	Strengths of civilian staff in MOD	30
4.10	Strengths of occupational groups	30
4.11	Civilian apprentices: type of establishment	31
4.12	Civilian apprentices: location	31
4.13	Deployment of UK manpower: United Kingdom	32
4.14	Deployment of UK manpower: overseas	33
4.15	Recruitment of UK Regular Forces: by Service	
4.16	Recruitment of male UK Regular Forces: by category	35
4.17	Outflow of UK Regular Forces: by Service	36
4.18	Outflow of UK Regular Forces: by category	37
4.19	Occupational recruitment and losses	38
4.20	Outflow of trained Service Personnel: major skill or trade groups	39
4.21	Indices and illustrative rates of military salary	40
5	Welfare	
5.1	Social expenditure included in the Defence budget	41
5.2	Strengths of uniformed medical staff of the UK Regular Forces	
5.3	Service hospitals	42
5.4	Sickness of UK Regular Forces	43
5.5	Medical discharges of UK Regular Forces	44
5.6	Deaths of UK Regular Forces	44
5.7	Selected qualifications obtained under Service sponsorship	45
5.8	Service aircraft: accidents involving loss or serious damage, rates and casualties	46
5.9	Aircraft accidents in 1987	47
5.10	Strengths of male UK Regular Forces and numbers married: by age	48
5.11	Strengths of male UK Regular Forces and numbers married: by rank	49
5.12	Land and foreshore holdings: location	50
5.13	Land and foreshore holdings: type of use	51
5.14	Service entertainment and welfare	52
5.15	SSVC Broadcasting Division (BFBS)	53
5.16	Service pensioners	54
5.17	Service married accommodation	55

		Page
6	Defence services	
6.1	Armed Forces and security in Northern Ireland	56
6.2	Search and rescue operations at home	57
6.3	Military aid to civil ministries during disputes	58
6.4	Expenditure on offshore tasks included in the Defence budget	58
6.5	Fishery protection	59
6.6	Meteorological Office	59
6.7	Hydrographic services	60
6.8	UK employment dependent on Defence expenditure	61
6.9	Defence expenditure on equipment and associated direct employment	62
Defence expenditure and estimates of related employment		61
Bibliography		63
Index		64

General notes on the tables

Symbols

- nil or less than half the final unit shown
.. not available
* not applicable
nes not elsewhere specified

Sources

Except where otherwise stated all information is from records maintained by the Ministry of Defence for departmental purposes.

Rounding

In many of the tables the figures are individually rounded and thus may not sum precisely to the totals shown.

A publication of the Government Statistical Service

Government Statistical Service

A service of statistical information and advice is provided to the Government by specialist staffs employed in the statistical divisions of the individual Departments. Statistics are made generally available through their publications and further information and advice on them can be obtained from the Departments concerned.

Following the publication of last year's volume a sample of regular users was invited to comment on its content and presentation. As a result of the replies received some changes have been made to this year's volume. In particular there was considerable interest in the regional spread of Defence expenditure and the employment thereby generated. The article on pages 61 and 62 describes the methods used to derive estimates of regional Defence expenditure on equipment by region, the employment generated both directly and indirectly by Defence expenditure; and presents the available data.

New Tables

(i) Table 2.10 lists the UK-based contractors paid £5 million or more by MOD in 1986-87; this information has been shown in Volume 1 in previous years.

(ii) Table 6.8 shows estimates of UK employment dependent on Defence expenditure. Some of these data have been included in previous years in Volume 1. This table presents the complete set of estimates for the past eight years.

(iii) Table 6.9. shows the regional breakdown of Defence expenditure on equipment and the associated direct employment for 1985-86.

Discontinued Tables

To find space for the new tables and the article it was necessary to omit one of the tables from last year's volume. It was decided to discontinue the table which showed the percentage distribution of manpower by major programme because this table simply expressed in percentage form the basic data available in tables 4.2 and 4.3.

Other Revisions

The manpower chapter notes and the titles to some of the manpower tables have been revised to clarify where data relate to UK Regular Forces. For presentational reasons certain tables are shown on facing pages. In order to achieve this it has been necessary to change the relative position and hence table numbering of some of the tables.

99

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
	£ million					
Defence budget (Supply estimates)	12,274	14,091	15,973	17,033	18,059	18,479
Defence expenditure (National Accounts definition)	12,668	14,534	16,394	17,431	18,467	18,968
Defence budget expenditure (Outturn)	12,607	14,412	15,487	17,122	17,943	18.163
of which: Personnel	5,058	5,455	5,726	5,983	6,379	6,890
Equipment	5,638	6,297	6,939	7,838	8,193	7,885
Other	1,910	2,659	2,822	3,302	3,370	3,387
Defence balance of payments: invisible transactions						
Total debits	1,183	1,452	1,254	1,453	1,548	1,734
Total credits	114	104	148	159	164	200
Net balance	-1,068	-1,348	-1,106	-1,293	-1,384	-1,534

	1982	1983	1984	1985	1986	1987
Defence visible trade: identifiable equipment						
Exports (£ million f.o.b)	904	919	825	813	826	1,233
Imports (£ million c.i.f.)	199	207	253	246	295	285
Manpower at April each year	Thousands					
Service						
UK Regular Forces	328	321	326	326	323	320
Locally entered	10	10	10	10	10	10
Regular reserves	196	193	198	206	212	220
Volunteer reserves	86	87	86	89	95	97
Cadet Forces	149	149	146	145	143	146
Civilian						
MOD Total	252	243	233	206	202	196
Non-industrial	119	116	114	105	104	104
Industrial	133	127	119	101	98	92
UK based	217	209	199	174	169	164
Locally engaged	35	34	33	32	32	32
	£ billion at market prices					
UK Gross Domestic Product	276.4	301.0	320.1	351.9	374.9	
General government total expenditure [1]	128.6	138.5	146.9	157.6	162.2	
of which:						
Defence	14.5	15.9	17.2	18.3	18.6	
Education	15.3	16.3	17.1	17.4	19.5	
Health	14.1	15.9	16.8	17.9	19.4	
Defence expenditure as a percentage of Gross Domestic Product	5.2	5.3	5.4	5.2	5.0	4.7[2]

Source: United Kingdom National Accounts 1987 Edition

1. Including debt interest and allowance for non-trading capital consumption not allocated to specific services.
2. Provisional estimate.

1.2 Strength of the Armed Forces

This table presents a summary of the units shown in Annexes A, B and C of Volume 1. The number of personnel and the amount of equipment in each vessel, regiment, battalion or squadron vary according to the role currently assigned.

1 April — Number

	Unit	1982	1983	1984	1985	1986	1987	1988 [1]
Front line units [2]								
Royal Navy [3]								
Submarines	Vessels	22	21	22	24	26	26	24 (+)
Carriers and assault ships	Vessels	3	4	4	4	4	3	3
Destroyers and frigates	Vessels	49	55	52	46	47	46	42 (−)
Mine counter-measure	Vessels	33	36	34	32	39	36	35 (+)
Patrol ships and craft	Vessels	21	25	31	28	32	28	32 (+)
Fixed wing aircraft	Squadrons	3	3	3	3	3	3	3
Helicopters	Squadrons	15	13	12	14	14	14	14 (−)
Royal Marines	Commandos	3	3	3	3	3	3	3
Regular Army								
Royal Armoured Corps	Regiments	19	19	19	19	19	19	19
Royal Artillery	Regiments	22	22	22	22	22	22	22
Royal Engineers [4]	Regiments	11	12	12	13	13	13	13
Infantry [4]	Battalions	57	56	56	56	56	55	55 (−)
Special Air Service	Regiments	1	1	1	1	1	1	1
Army Air Corps	Regiments	6	4	4	4	4	4	4 (−)
Territorial Army								
Royal Armoured Corps	Regiments	2	5	5	5	5	5	5 (+)
Royal Artillery	Regiments	5	5	5	5	6	6	6 (+)
Royal Engineers	Regiments	7	7	7	7	7	7	7
Infantry	Battalions	38	35	35	35	40	40	41 (+)
Special Air Service	Regiments	2	2	2	2	2	2	2
Honourable Artillery Company	Regiments	1	1	1	1	1	1	1
Royal Air Force								
Strike/attack	Squadrons	12	10	11	11	11	11	11
Offensive support	Squadrons	5	5	5	5	5	5	5
Air defence	Squadrons	9	9	8	9	9	9	9
Maritime patrol	Squadrons	4	4	4	4	4	4	4
Reconnaissance	Squadrons	3	2	3	3	3	3	3
Airborne early warning	Squadrons	1	1	1	1	1	1	1
Transport [5]	Squadrons	10	11	10	11	12	12	12
Tankers	Squadrons	2	3	3	3	4	3	3
Search and rescue	Squadrons	3	3	2	2	2	2	2
Surface to air missiles	Squadrons	8	8	8	8	8	8	8
Ground defence	Squadrons	6	6	5	5	5	5	5
Royal Auxiliary Air Force								
Ground Defence	Squadrons	3	6	6	6	6	6	6
Air Defence Guns	Squadrons	-	-	-	-	1	1	1
Support units								
Royal Navy and Royal Fleet Auxiliary Service								
Support ships	Vessels	2	2	2	2	3	3	3
Hospital ships	Vessels	1	1	1	1	1	0	1
Training ships	Vessels	5	7	6	4	4	3	4
Survey ships	Vessels	11	11	12	8	7	8	8
Tankers [6]	Vessels	14	10	11	14	14	14	14
Replenishment ships [6]	Vessels	3	3	4	4	4	4	4
Support and Supply ships [6]	Vessels	3	1	1	2	2	1	1
Landing ships, logistic [6]	Vessels	5	6	6	5	6	6	6
Forward repair ships [6]	Vessels	-	-	-	1	1	1	2
Royal Marines								
Logistic unit	Regiments	1	1	1	1	1	1	1

1. Figures for the current year are provisional.
2. Units which comprise the 'teeth' elements of the Armed Forces.
3. Excludes vessels undergoing major or restorative refit, conversion, or on stand-by etc.
4. Includes Gurkhas.
5. Includes helicopters.
6. Ships of the Royal Fleet Auxiliary Service.

1.3 Merchant vessels available for defence purposes[1]

31 December

Number

	1984	1985	1986	1987
Vessels registered in the UK				
Large stern trawlers, other fishing vessels, offshore support etc [2]	404	377	335	318
Product tankers [3]	94	87	42	27
Break-bulk general cargo vessels [4]	177	177	152	140
Large passenger ships	3	3	2	2
Roll on-Roll off ferries, passenger and freight	70	70	63	63
Tugs [5]	102	106	96	93
Vessels registered in Crown Dependencies and Dependent Territories				
Large stern trawlers, other fishing vessels, offshore support etc [2]	..	..	2	8
Product tankers [3]	..	..	61	73
Break-bulk general cargo vessels [4]	..	..	85	41
Large passenger ships	..	..	0	0
Roll on-Roll off ferries, passenger and freight	..	..	10	11
Tugs [5]	..	..	2	5

Source: Department of Transport

1. Vessels, in the principal categories required for defence purposes, which are available within required timescales and could be requisitioned under the royal prerogative.
2. Large stern trawlers are no longer shown as a separate category since the auxiliary minesweeper requirement could be met by modified offshore support or other vessels.
3. 2,000 to 60,000 DWT.
4. Mostly short-sea vessels.
5. Bollard pull of 30 tonnes and over.

1.4 UK merchant fleet: manpower figures[1]

Yearly Averages

	1982	1983	1984	1985	1986	1987
Officers	25,104	20,635	17,646	15,523	13,036	10,978
Ratings	25,224	22,624	20,251	19,095	17,612	15,835
Misc and seasonal	421	387	632	604	796	See note[2]
Cadets	4,022	2,732	1,625	1,016	727	554

1. These numbers are based upon the General Council of British Shipping (GCBS) register for the years indicated as available for employment in National Maritime Board (NMB) agreements with GCBS members or associates. They include foreign seafarers on NMB agreements. About 5,000 foreign seafarers serve on GCBS registered vessels but probably fewer than 1,000 are under NMB conditions. The figures also include seafarers on non-UK flag vessels registered with the GCBS for manning purposes. Excluded are seafarers employed by UK companies which do not use GCBS manning services; the latest estimate for these is 8,000.
2. The figures also exclude miscellaneous and seasonal employees whose services are unrelated to maritime activity.

2.1 The Defence budget and its relation to defence expenditure

Figures are based on the *Supply Estimates* and reflect the price levels of *Supply Estimates* for the years in question.

£ million

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
Defence Votes	13,945.4	15,791.5	16,817.8	17,868.9	18,485.9	18,785.8	19,221.3
Attributions from other votes [1]	138.1	173.1	204.2	177.9	-	1.7	-
Other adjustments [2]	7.1	8.0	11.2	11.7	-6.4	-5.5	-6.0
Defence budget	14,090.6	15,972.6	17,033.2	18,058.5	18,479.5	18,782.0	19,215.3
Military aid to overseas countries	14.9	14.6	13.0	13.9	13.6	10.7	12.6
Supporting services [3]							
Accommodation (maintenance and rental) [4]	62.6	†	†	†	†	†	†
Home publicity [4]	7.2	7.1	†	†	†	†	†
Civil superannuation	254.1	333.0	362.3	347.8	384.9	320.2	347.1
Rates [5]	119.2	78.9	56.7	81.3	123.2	128.6	125.5
Services by National Audit Office	2.7	3.2	4.4	5.0	4.2	2.2	1.4
Services by Treasury Solicitor	2.7	2.6	2.7	2.7	2.7	2.9	3.1
Valuation services by Inland Revenue	0.1	0.1	0.1	0.2	0.2	0.3	0.2
Various other services	1.9	1.8	1.9	1.9	1.6	2.2	2.3
Meteorological services in Defence budget	-36.7	-34.5	-41.3	-43.9	-41.8	-49.7	-59.1
Other adjustments [6]	14.8	14.0	-2.1	-	-	-	-
Defence expenditure (NATO and National Accounts definitions)	14,533.7	16,393.5	17,430.8	18,467.4	18,968.1	19,199.4	19,635.8

1. These represent Property Service Agency staff costs and other PSA expenditure for which the Secretary of State for Defence is responsible. From 1985-86, consultants' fees in respect of major works are included in Defence Votes totals. From 1986-87, all PSA expenditures are included in Defence Votes totals. From 1987/88, this represents PSA expenditure on major works on the Civil Estate funded from the Defence budget. From 1988/89, major works on the Civil Estate are funded from Defence Votes.

2. These cover those Appropriations-in-Aid and expenditure which are included in the Defence Votes but not classified as public expenditure.

3. These are the Defence portion of services performed by certain government departments for government generally.

4. A dagger † against these items indicates that they have been included in the Defence budget for the years shown.

5. Rates on the Defence portion of the UK civil estate are included in the Defence budget from 1983-84.

6. These adjustments are necessary to give the standard NATO and National Accounts Definitions of Defence expenditure, which have been identical since 1979-80.

Appropriation Accounts are prepared after the end of the financial year and record the actual payments and receipts.
Appropriations-in-Aid are receipts used to offset expenditure. They generally arise from the provision of repayment services, the sale of surplus goods or of equipment purchased on behalf of the Defence Sales organisation.
Defence budget consists of all the expenditure for which the Secretary of State for Defence is responsible. It comprises the net total of voted expenditure by the Ministry of Defence and by the Property Services Agency on behalf of the Ministry of Defence which are classified as direct public expenditure for the purpose of public expenditure white papers and the national accounts.
Estimates, Supply Estimates are prepared before the beginning of the financial year and give the proposed expenditure. These are then voted by Parliament.
Estimates prices are the prices used in the Estimates presented to Parliament. They are forecasts of the prices expected to rule when the expenditure occurs.

2.2 Principal headings of the Defence budget

	Outturn					Estimates [1]	
	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
	£ million						
Total expenditure[2,3]	14,412	15,487	17,122	17,943	18,163	18,782	19,215[4]
Expenditure on personnel	5,455	5,726	5,983	6,379	6,890	7,028	7,551
of the Armed Forces	2,914	3,076	3,236	3,510	3,787	3,943	4,228
of the retired Armed Forces	680	777	828	899	980	1,050	1,102
of civilian staff	1,861	1,873	1,919	1,970	2,123	2,035	2,161
Expenditure on equipment	6,297	6,939	7,838	8,193	7,885	8,539	8,241
Sea	1,730	1,849	2,228	2,499	2,494	2,940	2,821
Land	1,353	1,475	1,638	1,887	1,759	1,690	1,670
Air	2,640	3,057	3,474	3,296	3,090	3,322	3,042
Other	574	558	498	511	542	587	709
Other expenditure	2,659	2,822	3,302	3,370	3,387	3,215	3,422
Works, buildings and land	832	1,067	1,271	1,413	1,498	1,411	1,447
Miscellaneous stores and services	1,827	1,754	2,031	1,958	1,889	1,805	1,975
Total expenditure at constant (1986-87) prices	17,878	18,126	18,841	18,814	18,163	17,852	17,477
Outturn figures adjusted for carry-forward	17,878	18,420	18,710	18,929	18,522	17,852	17,477
of which estimated Falklands	1,209	873	780	629	402	232	145
	Per cent						
Percentage shares of the total expenditure							
Expenditure on personnel	37.8	37.0	34.9	35.6	37.9	37.4	39.3
the Armed Forces	20.2	19.9	18.9	19.6	20.9	21.0	22.3
Retired Armed Forces	4.7	5.0	4.8	5.0	5.4	5.6	5.7
of civilian staff	12.9	12.1	11.2	11.0	11.7	10.8	11.3
Expenditure on equipment	43.7	44.8	45.8	45.7	43.4	45.5	42.9
Sea	12.0	11.9	13.0	13.9	13.7	15.7	14.7
Land	9.4	9.5	9.6	10.5	9.7	9.0	8.7
Air	18.3	19.7	20.3	18.4	17.0	17.7	15.8
Other	4.0	3.6	2.9	2.8	3.0	3.1	3.7
Other expenditure	18.5	18.2	19.3	18.8	18.6	17.1	17.8
Works, buildings and land	5.8	6.9	7.4	7.9	8.2	7.5	7.5
Miscellaneous stores etc	12.7	11.3	11.9	10.9	10.4	9.6	10.3

1. Figures in these columns are derived from the original *Supply Estimates* for the years quoted. Current forecast outturn at constant (1986- 87) prices is £17,752 million.

2. Outturn and Estimates are given at outturn and Estimates prices respectively.

3. The decision to contractorise the Royal Dockyards from April 1987 has the effect of increasing Sea Systems expenditure and decreasing expenditure on personnel and miscellaneous stores and services.

4. Includes £1,020 million of direct dollar expenditure and £1,530 million of direct Deutschemark expenditure. From 1988/89, the Defence Estimates were costed at the end of June exchange rates prevailing in the previous year, except for US Dollar and Deutschmark cited at the average buy forward rate £1 = $1.62 = DM2.76.

Outturn, forecast outturn describes actual expenditure or estimates of it made on the basis of incomplete information ie before the Appropriation Accounts are prepared.

Outturn prices are the prices of the period when the expenditure occurs, also described as current prices.

2.3 Analysis of the Defence budget by programme[1]

£ million

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	
Total Defence budget	14,091	15,973	17,033	18,059	18,479	18,782	19,215
Nuclear strategic force	327	382	384	509	658	882	1,072
Navy general purpose combat forces[2]	1,861	2,149	2,493	2,505	2,625	2,491	2,425
Submarines	463	468	322	408	426	421	431
Aircraft and ASW carriers	71	140	94	78	74	83	104
Amphibious forces	52	60	78	81	82	87	99
Destroyers and frigates	636	722	691	738	792	756	660
Mine counter-measures vessels	150	159	137	145	147	115	100
Other vessels	204	285	466	452	460	451	428
Aircraft	198	242	312	291	304	251	265
Fleet headquarters	26	24	123	119	118	111	117
Overseas shore establishments	61	49	61	37	48	45	51
Naval bases and operational support	..	..	209	156	174	171	170
European theatre ground forces	2,194	2,445	2,626	2,764	2,814	3,035	3,259
British Army of the Rhine	1,512	1,700	1,796	1,899	1,882	2,044	2,253
Berlin[3]	38	42	47	49	52	55	59
Home forces	644	703	783	816	880	936	947
Other Army combat forces	41	191	197	205	204	177	166
Mediterranean	62	62	68	81	84	74	75
Hong Kong and other Far East	-36	1	-8	-27	8	11	29
South Atlantic	-	105	113	126	82	44	36
Other areas	15	23	24	25	30	48	26
Air Force general purpose forces	2,729	3,207	3,409	3,702	3,687	3,416	3,416
Air defence	453	579	702	730	817	717	731
Offensive support	83	118	116	202	320	387	382
Strike/attack/reconnaissance	1,005	922	775	817	802	635	631
Maritime aircraft	143	139	135	162	131	114	130
Transport aircraft	164	231	221	254	226	222	207
Tanker aircraft	42	128	200	135	93	89	93
Civil charter	18	17	30	37	18	22	20
Other aircraft	112	122	135	132	245	186	136
Operational stations	328	418	464	526	428	428	447
Headquarters	54	68	76	79	80	90	100
General support	327	465	555	628	527	526	539
Reserve and Auxiliary formations	287	312	357	360	358	385	420
Navy	14	15	16	14	18	20	21
Army	255	279	316	316	323	342	372
Air Force	18	18	25	30	17	23	27
Research and development[4]	1,833	1,896	2,097	2,304	2,327	2,337	2,257
Ship construction and underwater warfare	287	328	390	424	429	377	348
Ordnance and other Army	164	177	182	188	138	142	188
Military aircraft	596	556	508	524	648	667	628
Guided weapons	235	245	314	362	311	341	350
Other electronics	284	282	340	397	427	325	337
Other research and development	267	308	363	409	374	485	406
Training	1,162	1,230	1,310	1,294	1,257	1,277	1,249
Service colleges	75	85	99	86	100	111	111
Navy	418	443	407	395	391	391	333
Army	420	428	527	538	514	520	538
Air Force	249	274	277	275	252	255	267
Equipment support and associated facilities in UK	869	1,040	931	917	983	881	955
Royal Dockyards[6]	125	128	113	107	125	7	107
Other repair and maintenance	272	401	348	319	304	338	351
Storage and supply	357	403	359	394	456	428	396
Quality assurance	115	108	111	97	98	108	101
War and contingency stocks	403	410	549	535	405	588	520
Navy	110	161	204	206	218	221	172
Army	202	165	225	198	170	139	150
Air Force[5]	91	84	120	131	17	228	198
Other support functions	2,307	2,631	2,811	2,998	3,184	3,373	3,526
Whitehall organisations	205	222	236	248	273	306	317
Local administration communications etc in UK	903	1,080	1,184	1,309	1,380	1,496	1,556
Meteorological services[4]	37	34	41	44	41	46	59
Family and personnel services in UK	240	241	251	223	242	226	254
Service pensions	657	754	832	923	986	1,053	1,104
Other support services	265	300	267	251	262	246	236
Miscellaneous expenditure and receipts	78	80	-131	-34	-23	-60	-50

1. Functional categories or programme elements are combined into major groupings of expenditure which correspond with major fields of defence activity called programmes.
2. The attribution of Royal Naval expenditure was changed in 1983-84, thus figures prior to 1983-84 are not fully comparable with later data.
3. Excluding expenditure covered by the Allied 'Declaration on Berlin'.
4. Meteorological research and development is included under Meteorological services.
5. The attribution of RAF war stocks was amended in 1986-87 and then revised again in 1987-88. Figures for these years are not comparable with each other nor with earlier years.
6. The attribution of Royal Dockyards was amended in 1987-88, and then revised again in 1988-89. Figures for these years are not comparable with each other nor with earlier years.

2.4 Works, buildings and land: Departmental responsibilities

£ million

	Outturn					Estimates [1]	
	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
Total Defence budget expenditure [2]	832	1,067	1,271	1,413	1,498	1,411	1,477
MOD net total [3]	-51	-51	-6	-32	-23	-68	-104
PSA net total	883	1,118	1,277	1,445	1,521	1,479	1,581
New works gross total	394	584	707	778	880	886	840
Maintenance gross total	506	548	542	597	659	627	674
Personnel costs [4]	161	209	251	290	230	325	352
Appropriation-in-aid total	-177	-223	-222	-220	-248	-359	-285

1. Figures in this column are derived from the original *Supply Estimates* for that year.
2. Outturn and Estimates are given at outturn and Estimates prices respectively.
3. Including accommodation charges as appropriate.
4. Includes the costs of PSA and DOE staff and consultants and overheads attributable to defence work. From 1985-86, consultants' fees in respect of major works are included in the new works total.

2.5 Defence expenditure in the UK: estimated breakdown by industry group

£ million

	SIC (80) Group[1]	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
Total [2]		6,180	6,954	7,096	8,014	8,128	7,919
Solid fuels [3]	111.120	9	10	10	11	10	12
Petroleum products [3]	140	512	847	673	737	601	385
Gas, electricity and water supply [3]	161-170	160	173	182	195	213	231
Ordnance, small arms and ammunition	329	437	532	584	675	699	683
Other mechanical and marine engineering	320-328	278	347	410	407	415	427
Data processing equipment	330	90	77	97	104	121	130
Other electrical engineering	341-348, nes	131	127	119	136	135	145
Electronics	344, 345	1,219	1,311	1,550	1,638	1,697	1,599
Motor vehicles and parts	351-353	162	209	187	274	288	253
Shipbuilding and repairing	361	544	517	425	557	660	700
Aerospace equipment	364	2,007	2,093	2,070	2,461	2,391	2,418
Instrument engineering	371-374	173	146	125	115	118	114
Food [3]	411-429	103	115	113	126	132	127
Textiles, leather goods and clothing [3]	431-456	73	84	93	111	124	133
Other production industries	111-495, nes	158	185	243	237	271	290
Other industries and services	nes	124	181	215	230	253	272

1. Groups in the Standard Industrial Classification (1980 revision)
2. Gross expenditure at current prices excluding VAT, pay and allowances, general administrative expenses (amounting to some £774 million in 1986-87), Property Services Agency expenditure on behalf of the Ministry of Defence and other expenditure on land, buildings and works services.
3. Includes payments for goods and services purchased overseas.

2.6 Defence balance of payments: invisible transactions[1]

£ million

	Outturn					Estimates[2]	
	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
Total debits	1,452	1,254	1,453	1,548	1,734	1,649	2,001
Total military services	1,427	1,219	1,411	1,495	1,724	1,599	1,986
Local Defence expenditure	1,070	1,008	1,128	1,216	1,518	1,382	1,809
Germany	858	790	894	981	1,197	1,134	1,484
Other NATO area	63	75	78	86	91	87	113
Mediterranean	98	111	124	122	151	140	167
South Atlantic	9	8	3	5	45	4	10
Far East	4	-9	-7	-18	-3	-22	1
Other areas	38	34	36	41	38	39	34
Other military services[3]	357	210	282	279	206	217	178
Transfers - contributions to international defence organisations	25	36	42	52	9	50	14
Total credits	104	148	159	164	200	252	263
Receipts from US Forces	83	126	137	145	180	223	237
Other receipts	21	22	23	19	19	29	27
Net balance (- = debit)	-1,348	-1,106	-1,293	-1,384	-1,534	-1,397	-1,738

1. This table covers transactions by the British Government in relation to Defence and includes receipts from the United States Government in respect of forces stationed in the United Kingdom. The figures for local Defence expenditure represent the drawings of foreign exchange necessary to support our forces overseas. They take no account of offsetting factors such as the reduction in imports to the United Kingdom which result from the stationing of forces overseas, which would be accounted for in the UK balance of payments generally. In addition, estimates are made of non-governmental transactions relating to defence. Official payments by the United States Forces in the United Kingdom to British firms and agencies other than central government plus private expenditure by United States personnel are expected to amount to about £660 million in 1988-89. Outturn and Estimates are given at outturn and Estimates prices respectively.

2. Figures are derived from the original *Supply Estimates* for the years quoted.

3. Including contributions to infrastructure projects (net) and payments for R&D levies. Receipts for R&D levies, etc are entered as 'other receipts'.

2.7 Exports of defence equipment

£ million

	1982	1983	1984	1985	1986	1987
Defence equipment at free on board prices identified by Customs and Excise [1]	904	919	825	813	826	1,233
Armoured fighting vehicles and parts	208	195	146	127	87	56
New combat aircraft including helicopters	126	184	156	71	146	253
New military non-combat aircraft including helicopters	90	76	56	103	46	73
Warships	27	7	40	4	12	61
Guns, small arms and parts	68	66	121	155	133	214
Guided weapons and missiles	61	61	52	55	39	143
Ammunition	184	145	93	85	209	287
Radio and radar apparatus	100	125	106	128	115	94
Optical equipment and training simulators	39	60	56	85	40	49
Destination of identified equipment						
NATO countries and other W Europe	185	206	175	247	209	254
Middle East and N Africa	405	506	311	284	412	632
Other Africa	97	55	201	155	68	45
Asia and Far East	192	137	108	73	100	260
Latin America and Caribbean	25	16	30	54	38	41
Estimates of additional aerospace equipment [2]	1,160	1,189	1,310	940	1,312	..
Airframe parts and guided weapons	343	358	448	396	566	..
Aircraft equipment	194	210	235	316	451	..
Aeroengines and parts	165	155	147	201	270	..
Space equipment	26	31	30	27	25	..
Other electronics	300	320	330	..	..	..
Road vehicles	132	115	120	..	..	..

1. These figures refer to actual deliveries of Defence equipment and are different from the figure given for Defence Sales in Volume 1 which is for new contracts recorded.

2. It is not possible to distinguish between military and civil goods under these headings in Customs and Excise records. These estimates of military exports are based on figures from the Society of British Aerospace Companies. Exports for collaborative projects are excluded.

2.8 Imports of defence equipment

£ million

	1982	1983	1984	1985	1986	1987
Identified Defence equipment	199	207	253	246	295	285
Guided weapons and missiles	108	85	102	119	175	145
Ammunition	18	17	16	35	58	41
Guns, small arms and parts	27	36	33	40	38	67
Armoured fighting vehicles and parts	14	21	10	10	5	4
Radio, radar and optical equipment	28	47	38	24	17	28
Military aircraft including helicopters	3	-	54	18	3	-
Origins of identified equipment						
NATO countries and other W Europe	184	178	239	220	268	266
Asia and Far East	5	3	5	16	11	5
Others	9	25	9	10	16	14

2.9 Contracts placed: analysis of contracts by type of contract

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
	£ million						
Total value of Headquarters contracts placed [1]	4,089	4,606	6,830	8,580	8,217	7,523	9,310
	Per cent						
Percentage shares of total value							
Contracts priced by competition	22	23	21	22	27	38	39
Contracts priced otherwise by reference to market forces [2]	14	14	15	16	19	26	14
Contracts priced on estimates at outset or as soon as possible thereafter [3]	35	40	45	37	31	24	20
Contracts priced on actual costs with incentives to minimise costs [3]	7	2	3	10	11	3	20
Contracts priced on actual costs plus a percentage fee [3]	22	21	16	15	12	9	7
	Number						
Total number of Headquarters contracts placed [4]	76,368	66,177	85,716	82,094	96,458	116,552	113,051
	Per cent						
Percentage shares of total number							
Contracts priced by competition	13	14	11	12	12	12	14
Contracts priced otherwise, by reference to market forces [2]	59	55	65	65	70	74	72
Contracts priced on estimates at outset or as soon as possible thereafter [3]	16	17	13	12	10	8	8
Contracts priced on actual costs with incentives to minimise costs [3]	1	1	1	1	1	1	1
Contracts priced on actual costs plus a percentage fee [3]	11	13	10	10	7	5	5

1. Including the value of amendments to existing contracts.
2. Includes use of informal competitive tendering procedures and commercial price lists (appropriately discounted).
3. Priced by reference to the Government profit formula.
4. Including the number of amendments which had financial implications for existing contracts.

2.10 UK-based Contractors paid £5 million or more by MOD in 86-87

British Aerospace plc (Aircraft)	The Plessey Co. plc	Vickers Shipbuilding & Engineering Ltd
British Aerospace plc (Dynamics)	Rolls Royce Ltd	
The General Electric Co plc		
£100 - 250 million		
The British Petroleum Co plc	Racal Electronics plc	Vickers plc
Ferranti plc	Royal Ordnance plc	Westland plc
Hunting Associated Industries plc	Thorn-EMI plc	
£50 - 100 million		
British Railways Board	Pilkington Bros plc	STC plc
British Telecommunications plc	Philips Electronic and Associated Industries Ltd	Swan Hunter Shipbuilders Ltd
Dowty Group plc	The "Shell" Transport & Trading Co plc	Yarrow Shipbuilders Ltd
Esso UK plc	Short Bros plc	
Lucas Industries plc		
General Motors Ltd		
£25 - 50 million		
Austin Rover Group Ltd	FR Group plc	Smiths Industries plc
British Airways plc	GKN plc	United Scientific Holdings plc
BTR plc	Marshall of Cambridge (Engineering) Ltd	Vosper Thorneycroft (UK) Ltd
Civil Aviation Authority	Paccar UK Ltd	
Digital Equipment Co Ltd		
£10 - 25 million		
Avon Rubber plc	Cranfield Institute of Technology	Petrofina (UK) Ltd
BET plc	Cray Electronics Holdings plc	RCA Ltd
The British & Commonwealth Shipping Co plc	DRG plc	Remploy Ltd
British Shipbuilders	Frazer-Nash Group Ltd	Singer Link Miles Ltd
Cambridge Electronic Industries plc	Harland and Wolff plc	Systems Designers plc
Coats Viyella plc	Hawker Siddeley Group plc	UK Universities
Control Data Ltd	Hewlett Packard Ltd	United Kingdom Atomic Energy Authority
Cossor Electronics Ltd	Honeywell Ltd	The Weir Group plc
	Mobil Holdings Ltd	Yarrow plc
	Northern Engineering Industries plc	
£5 - 10 million		
Apricot Computers plc	Gibraltar Shiprepair Ltd	The Rank Organisation plc
BBA Group	Goodyear Tyre & Rubber Co (GB) Ltd	Readicut International plc
BMARC Ltd	Hall Russell Ltd	RFD Group plc
Bodycote International plc	Hogg Robinson Group plc	RHP Group plc
Caledonian Aviation Group plc	Humber Shiprepairers Ltd	Ropner plc
Cap Group plc	IBM United Kingdom Holdings Ltd	Saft (UK) Ltd
The Charente Steamship Co Ltd	Inchcape plc	Schlumberger Measurement & Control (UK) Ltd
Chemring Group plc	J. C. Bamford Excavators Ltd	Total Oil Holdings Ltd
Chloride Group plc	John Brown plc	Tozer Kemsley & Millbourn Holdings plc
Commercial Shearing Inc	Logica plc	Watsham's plc
Conoco (UK) Ltd	Mactaggart Scott (Holdings) Ltd	Waverly Electronics Ltd
Courtaulds plc	ML Holdings plc	Wills Group plc
David Brown (Holdings) Ltd	Martin-Baker Aircraft Co Ltd	
F L Smidth & Co (Holdings) Ltd	Massey Ferguson Holdings Ltd	
Ford Motor Co Ltd	Meggitt Holdings plc	
George Blair plc	Portsmouth Aviation Ltd	

Notes:

1. Includes suppliers of food, fuels and services
2. Within each financial bracket, contractors are listed in alphabetical order.
3. The status of companies in this list is that at 1 April 1986.

3.1 Equipment procurement expenditure [1]

£ million

	Outturn					Estimates [2]	
	1982-83	1983-84	1984-85	1985-86	1986-87 [3]	1987-88 [4]	1988-89
Procurement expenditure	6,815	7,504	8,573	8,979	8,726	9,405	9,139
Equipment	6,297	6,939	7,838	8,193	7,885	8,539	8,241
Associated costs	518	565	735	785	841	866	898
Procurement expenditure	6,815	7,504	8,573	8,979	8,726	9,405	9,139
Research	305	357	393	399	408	401	403
Development [5]	1,395	1,556	1,713	1,867	1,778	1,945	1,869
Production and repair	5,115	5,591	6,467	6,712	6,540	6,978	6,867
Sea	1,730	1,849	2,228	2,499	2,494	2,940	2,821
Development	262	344	439	510	488	500	456
Production and repair	1,468	1,506	1,789	1,990	2,006	2,440	2,365
Land	1,353	1,475	1,638	1,887	1,759	1,690	1,670
Development	211	229	258	278	320	274	298
Production and repair	1,142	1,246	1,379	1,609	1,439	1,416	1,372
Air	2,640	3,057	3,474	3,296	3,090	3,242	3,042
Development	461	571	594	616	531	661	595
Production and repair	2,179	2,486	2,880	2,680	2,559	2,580	2,447
General support	1,092	1,123	1,233	1,297	1,384	1,451	1,607
Research	305	357	393	399	408	401	403
Development [5]	461	412	421	464	439	509	520
Production	325	353	419	434	537	541	684

1. This table is derived from the Appropriation Accounts and the Supply Estimates. Outturn and Estimates are given at Outturn and Estimates prices respectively. Payments to civil votes and central government funds are included, but not superannuation and certain support costs.

2. The decision to contractorise the Royal Dockyards, from April 1987, affects the figures reported in this table. The Sea Systems amounts are increased and corresponding decreases on personnel, miscellaneous stores and services are apparent in other tables in this volume.

3. After 1985-86, all Air System package deal expenditure is included under Production.

4. 'Procurement' is consistent with the Supply Estimates, but 'Development' has been amended to reflect the decision to purchase AWACS in place of Nimrod AEW.

5. These figures include the costs of some Headquarters staff who are responsible for both research and development.

3.2 Major Equipment Projects

This table provides information on current major equipment projects and covers work approved up to 31 March 1987, adjusted to take account of decisions since taken and other expenditure which is in clear prospect. In order to make the table suitable for publication in its entirety, the in-service dates have in a number of cases been expressed in broad terms and some cost figures have been rounded.

Project	In-Service Date Forecast or Actual	Cost[1] £M	Years of Peak Expenditure
Nuclear weapon systems			
Trident	Mid 90s	9,043	Late 80s Early 90s
Sea systems			
Surface Ships			
T23 frigates	Late 80s Mid 90s	1,190	88-92
Single Role Minehunter	Late 80s Mid 90s	190	90-92
Auxiliary Oiler Replenishment Vessel	Early 90s	300	88-91
Submarines			
Type 2400 "Upholder"	88-93	620	Continuing to 91
Nuclear propulsion			
PWR2	87	410[2]	Past
Surface weapon systems			
Sea Dart missiles	77	1,170	Past
Sea Wolf missiles	79	470	Past
GWS25 Mod 3 Sea Wolf ship system	86	250	Late 80s
GWS26 Mod 1 Vertical Launch Sea Wolf missile/ship system	Early 90s	400	Late 80s - mid 90s
Harpoon-surface launched	Late 80s	160	Late 80s
Underwater weapon systems			
Sting Ray	83	1,680	Past
Spearfish	Late 80s	1,300	Late 80s Early 90s
Sonar 2016	79	310	Past
Sonar 2054	Mid 90s	310[3]	Late 80s Early 90s
Land Systems			
Fighting vehicles			
Challenger MBT	84	660	Past
TOGS	86	290	86-89
Warrior MCV	88	1,030	87-94
Weapon systems			
Milan	77	830	Past
Rapier Field Standard B	82	610	Past
Rapier Self Propelled	84	1,450	Past
Rapier Field Standard C	Mid 90s	1,400	90s
Blowpipe/Javelin	75	610	Continuing
High Velocity Missile	Early 90s	270	Early 90s
MLRS I	Early 90s	550	Late 80s Early 90s
LAW 80	88	400	Late 80s Early 90s
Communications			
Ptarmigan	86	1,400	Past
Air systems			
Fixed Wing Aircraft			
Tornado GR1	80	10,260	Past
Tornado ADV	84		
E-3A AEW	91	960	88-92
Harrier GR5	89	1,230[4]	87-90
Tristar First Batch	86	210	Past
Helicopters			
EH 101	Mid 90s	1,620	Mid 90s
Air weapons			
Sky flash	79	730	Past
Sea Eagle	85	340	Past
ALARM	Early 90s	610	Late 80s
JP 233	86	890	86-88
Electronic Systems			
Foxhunter AI radar	85	800	Past
Communication Satellites			
Skynet Stage 1	88	360	85-88

1. Costs are at average 87/88 outturn prices, and cover development and production, except where otherwise noted.
2. Development only.
3. Also included in Trident entry
4. Does not include the cost of the second batch referred to in paragraph 315 of Volume 1.

3.3 Defence research and development expenditure[1]

£ million

	Outturn					Estimates	
	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88[2]	1988-89
Research and development							
Total Gross expenditure	1,762	1,986	2,176	2,361	2,274	2,433	2,356
Intramural	580	586	622	680	725	776	806
Extramural	1,181	1,400	1,554	1,681	1,549	1,657	1,550
Total Net expenditure	1,701	1,913	2,106	2,266	2,186	2,346	2,272
Intramural	529	536	576	633	670	725	751
Extramural	1,170	1,378	1,530	1,634	1,516	1,621	1,521
Intramural research and development							
Gross expenditure	580	586	622	680	725	776	806
Current:							
Personnel costs	302	297	289	313	328	336	373
Materials and equipment	168	188	204	206	232	230	250
Other	22	13	14	13	12	14	15
Capital:							
Land and buildings	17	22	33	60	83	101	57
Plant and equipment	71	66	83	88	70	96	109
Receipts	51	50	46	47	55	52	55
Intramural research: net	170	218	223	238	265	253	256
Intramural development: net	359	318	353	395	405	471	494
Extramural research							
Gross expenditure	143	148	177	180	172	169	170
Other Votes and central government funds	1	2	2	1	4	3	2
Universities and further educational establishments	8	8	10	13	15	15	16
Private industry and public corporations	133	134	159	159	148	142	143
Other	1	3	4	7	3	5	4
Overseas	1	1	3	-	2	4	5
Receipts	8	9	7	19	29	21	23
Net expenditure	135	140	170	162	143	148	147
Extramural development							
Gross expenditure	1,038	1,252	1,377	1,501	1,377	1,488	1,381
Other Votes and central government funds	28	27	28	50	29	1	-
Universities and further educational establishments	-	1	1	1	1	5	2
Private industry and public corporations	905	1,123	1,255	1,329	1,256	1,337	1,228
Other	-	4	-	2	1	-	5
Overseas	105	97	92	119	91	145	145
Receipts	2	14	17	28	4	14	6
Net expenditure	1,036	1,238	1,360	1,472	1,373	1,474	1,375

1. Outturn and Estimates are given at Outturn and Estimates prices respectively. Civil work carried out by MOD on repayment terms, superannuation and certain support costs are excluded.
2. Development has been amended to reflect the decision to purchase AWACS in place of Nimrod AEW.

3.4 Defence production expenditure [1]

£ million

	Outturn					Estimates [2]	
	1982-83	1983-84	1984-85	1985-86	1986-87 [3]	1987-88	1988-89
Gross expenditure	5,752	6,131	6,961	7,055	6,883	7,415	7,258
Sea equipment	1,601	1,650	1,925	2,128	2,134	2,626	2,544
Ships hulls and machinery	499	500	555	572	542	631	551
Weapon systems etc	555	582	727	787	828	895	780
Ship equipment and support services	92	92	91	129	128	144	154
Ship/weapon maintenance, equipment, stores and services	324	332	401	458	486	498	550
Dockyard services etc	132	144	151	182	150	459	510
Land equipment	1,433	1,398	1,573	1,699	1,537	1,496	1,436
Guns, small arms and chemical defence stores	45	29	26	23	41	65	79
Ammunition, mines and explosives	288	279	322	302	266	243	198
Fighting vehicles	101	118	131	155	148	188	247
Load carrying vehicles	133	119	155	167	150	163	138
Engineering equipment	77	73	75	85	61	53	41
Guided weapons	235	254	244	259	222	206	183
Communications	227	202	239	284	230	191	168
Surveillance equipment	95	95	86	85	82	80	71
Other stores	6	7	5	6	7	8	10
Maintenance	226	222	290	333	330	299	302
Air equipment	2,362	2,682	3,003	2,761	2,644	2,713	2,553
Aircraft, aero-engines and aircraft equipment	1,699	1,730	2,002	1,771	1,898	1,492	1,860
Guided weapons and electronic equipment	662	952	1,001	990	747	1,221	693
General support [4]	356	401	460	467	568	580	726
Receipts [5]	637	540	494	343	343	437	391
Sea equipment	133	144	136	138	127	187	179
Land equipment	291	153	194	90	98	80	64
Air equipment	182	196	123	81	86	133	106
General support	31	48	41	33	32	38	42
Net expenditure	5,115	5,591	6,467	6,712	6,540	6,978	6,867
Sea equipment	1,468	1,506	1,789	1,990	2,006	2,440	2,365
Land equipment	1,142	1,246	1,379	1,609	1,439	1,416	1,372
Air equipment	2,179	2,486	2,880	2,680	2,559	2,580	2,447
General support	325	353	419	434	537	541	684

1. This table is based on the *Appropriation Accounts* and the *Supply Estimates*. Outturn and Estimates are given at Outturn and Estimates prices respectively.
2. The decision to contractorise the Royal Dockyards, from April 1987, affects the figures reported in this table. The Sea Systems amounts are increased and corresponding decreases on personnel, miscellaneous stores and services are apparent in other tables in this volume.
3. After 1985-86, all Air Systems package deal expenditure is included under Production.
4. Including provision of facilities and quality assurance.
5. Receipts arise from the sale of surplus and of goods purchased on behalf of the Defence Export Services Organisation.

3.5 Service supply systems: major stockholdings

This table covers stocks held in the individual service's major depots. The operational requirements of each service result in different proportions of their stores held in major depots and therefore the table should not be used for inter-service comparisons.

The value of stock is based on the best estimate of prices ruling at the end of each financial year.

Forms, publications and obsolete stores are excluded from the figures.

	1982-83	1983-84	1984-85	1985-86	1986-87
	£ million				
Value of stock at the year end	7,673	8,513	9,581	9,978	10,269
Royal Navy	3,091	3,728	3,897	3,998	4,048
Army	2,012	2,001	2,282	2,308	2,303
Royal Air Force	2,570	2,784	3,402	3,672	3,918
	£ million				
Value of issue transactions in year	5,818	6,163	7,342	7,521	8,380
Royal Navy [1]	3,259	3,886	4,526	4,309	4,551
Army	1,381	1,127	1,185	1,154	1,427
Royal Air Force	1,178	1,150	1,631	2,058	2,402
Value of receipt transactions in year	5,645	6,145	7,842	7,874	8,344
Royal Navy	3,386	3,962	4,778	4,151	4,887
Army	1,206	1,069	1,298	1,253	1,275
Royal Air Force	1,053	1,114	1,766	2,470	2,182
	Millions				
Item types in inventory at year end	2.9	3.0	3.1	3.1	3.3
Royal Navy	0.8	0.9	0.9	0.9	0.9
Army	0.8	0.8	0.8	0.8	0.9
Royal Air Force	1.3	1.3	1.4	1.4	1.5
Number of issue transactions in year	9.4	8.8	10.4	9.7	9.7
Royal Navy [1]	3.7	3.3	4.6	4.3	4.1
Army	3.6	3.4	3.7	3.2	3.4
Royal Air Force	2.1	2.0	2.1	2.2	2.2
Number of receipt transactions in year	2.4	2.2	2.3	2.2	2.6
Royal Navy	1.4	1.2	1.3	1.2	1.4
Army	0.5	0.5	0.5	0.4	0.5
Royal Air Force	0.5	0.5	0.5	0.6	0.7
	Number				
Number of depots covered	74	71	72	74	75
Royal Navy	24	21	21	22	22
Army	10	10	10	10	10
Royal Air Force [2]	40	40	41	42	43

1 RN figures from 1984-85 reflect an increased visibility of stock following the introduction of the CRISP system

2 Includes RAF aircraft storage depots and commercially operated bulk aviation fuel storage facilities.

3.6 Defence energy consumption

Petajoules [1]

	Financial years							
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
All Fuels	149.2	135.8	136.5	154.2	150.9	139.3	131.1	137.2
Royal Navy [3]	44.7	39.8	40.8	54.6	52.2	45.1	40.3	43.6
Army	27.1	24.9	24.4	23.6	24.3	24.9	24.8	24.0
Royal Air Force	62.9	57.8	56.9	63.0	60.5	59.8	59.0	63.7
Procurement Executive	8.3	7.7	7.7	7.2	7.4	5.9	7.0	5.9
Royal Ordnance Factories [4]	6.2	5.8	6.7	5.8	6.5	3.7	-	-
Operational fuels	92.2	81.6	81.7	102.2	98.1	92.4	86.1	93.6
Aviation fuels	51.4	47.1	46.7	54.0	51.3	50.4	49.8	54.4
Diesel	26.1	22.2	22.9	36.7	35.9	31.8	27.8	30.1
Petroleum	4.0	3.6	3.6	3.8	3.7	3.9	3.7	3.7
Other liquid fuels	10.7	8.7	8.5	7.7	7.2	6.3	4.8	5.4
Non-Operational fuels [5]	57.0	54.2	54.8	52.0	52.7	47.1	44.9	43.6
Furnace fuel oil [6]	33.1	30.8	31.1	28.4	27.1	23.9	22.2	19.4
Other liquid fuels	0.9	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Electricity	8.6	8.6	8.7	8.6	9.2	8.6	8.7	9.1
Gas	8.5	8.6	8.4	8.8	9.9	9.5	9.7	11.1
Solid fuel	5.9	5.4	5.8	5.4	5.7	4.2	3.4	3.1

	£ million							
Expenditure on non-operational fuels [5, 7]								
Royal Navy [3]	..	..	..	..	..	..	46.7	42.4
Army	..	..	..	..	..	..	113.3	98.1
Royal Air Force	..	..	..	..	..	..	78.1	71.8
Procurement Executive	..	..	..	..	..	..	31.6	22.0

1. Petajoules = 10^{15} joules.
2. Provisional.
3. Royal Navy figures include the Royal Dockyards.
4. Up to January 1985, when the ROFs became a Companies Act company.
5. Non-operational energy is that energy used for domestic purposes, space heating, lighting and the operation of plant and machinery; it does not include energy used for the propulsion of vehicles, weapons, aircraft or ships.
6. Other than that used by the fleet.
7. Without allowing for As-In-A.

3.7 Royal Dockyards

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
	£ million						
Dockyard costs charged to production[1]	494.8	514.3	558.7	537.1	457.8	442.3	432.9
Direct costs							
Labour	94.7	97.8	109.5	103.5	96.7	91.1	99.2
Material	112.6	93.3	100.8	105.1	95.8	109.1	82.6
Dockyard services	47.4	56.1	63.8	66.4	69.6	69.7	67.3
Contract services	9.8	10.7	13.9	15.8	11.2	9.7	8.4
Overhead costs							
Production overheads	94.5	95.6	108.3	103.2	96.8	93.0	98.7
Administration and general overheads	135.8	160.8	162.4	143.1	87.7	69.7	76.7
less **Increase in work in progress**[1]	36.6	57.4	-48.9	-1.1	-74.0	-35.2	-269.1
Cost of completed work	458.2	456.9	607.6	538.2	531.8	477.5	702.0
For MOD customers	445.4	447.0	585.6	527.8	513.9	468.2	376.6
Ship construction repairs and alterations	351.3	343.7	473.9	423.2	426.8	395.8	304.4
Major refits	183.5	148.7	186.1	167.3	216.9	157.9	168.0
Restorative refits	-	-	-	-	13.0	31.1	13.2
Normal refits	95.0	105.0	135.0	165.2	121.0	151.2	76.9
Construction and other Shipwork	72.8	90.0	152.8	90.7	75.9	55.6	46.3
Repairs and modification of stores for stock	27.8	31.7	32.8	32.1	25.3	24.6	23.4
Manufacture of stores for stock	11.5	11.2	13.3	10.3	7.9	7.8	7.7
Plant and machinery for other establishments	1.8	2.3	7.8	5.5	11.3	3.9	4.0
Maintenance etc for other establishments	53.0	58.1	57.8	56.7	42.6	36.1	37.1
For non-MOD customers, on repayment	1.2	1.3	1.3	1.7	1.2	0.5	1.0
Plant and machinery for Dockyard use	11.6	8.6	20.7	8.7	16.7	8.8	19.3
Work in progress at 5.4.87 treated as completed work[2]							305.1
	Number						
Major refits completed	8	5	5	4	3	3	2
Submarines	2	1	2	1	2	2	2
Destroyers	1	-	1	-	-	-	-
Frigates	3	3	1	2	1	-	-
Mine counter-measures vessels	2	1	1	1	-	1	-
Restorative refits completed	-	-	-	-	1	1	1
Frigates	-	-	-	-	1	1	1
Normal refits completed	30	36	49	50	42	47	28
Royal Navy vessels							
Aircraft carriers	-	1	-	-	-	-	-
Submarines	2	1	1	3	1	4	-
Cruisers/destroyers	2	1	1	-	-	-	-
Frigates	4	3	2	4	3	7	6
Mine counter-measures vessels	9	10	8	8	7	7	6
Patrol vessels	2	5	4	5	-	3	2
Others	9	7	12	9	12	7	3
Royal Fleet Auxiliary vessels	-	3	11	5	5	2	-
Royal Maritime Auxiliary Services vessels	2	5	10	16	14	17	11
Average number of employees	33,232	31,923	29,554	26,750	24,221	19,264	17,958
Civilian personnel	33,165	31,861	29,500	26,705	24,181	19,234	17,934
Service personnel	67	62	54	45	40	30	24

1 Costs do not necessarily correspond to cash payments from Votes during the year: for example the direct costs include notional liability for civil superannuation and the cost of material used during the year, though possibly bought in previous years. The overhead costs include provision for the depreciation of fixed assets, many of which were acquired in previous years, and notional interest on capital.

2 Because of the privatisation of the dockyards, all work in progress at 5 April 1987 has been treated as completed work. In consequence, there was a decrease in "work in progress" of £269.1 million in 1986/87.

4. Manpower

This section deals with both Service and civilian manpower. For civilians the figures include, up to and including the day prior to change of status, staff employed at the Royal Ordnance Factories which changed to independant Companies Act status on 2 January 1985 and at the Royal Dockyards (Devonport & Rosyth) which changed to contractual management control on 6 April 1987.

The following definitions refer to Service personnel:

Regular Forces comprise both UK Regular Forces and locally entered personnel.

UK Regular Forces are normally recruited in the United Kingdom for full-time service worldwide.

Locally entered personnel are recruited outside the United Kingdom to serve full-time in special formations with special conditions of service. In some cases there are restrictions on the areas in which they are required to serve.

Regular Reserves are former members of the UK Regular Forces who have a liability for service in the Reserves.

Volunteer Reserves and Auxiliary Forces comprise personnel in civilian occupations who undertake to give a certain amount of their time to train in support of the Regular Forces. They also include a number of non-Regular permanent staff and both full and part-time members of the UDR.

Officers designate are candidates for commissioned service who are required to complete successfully a period of training before they are appointed to commissions. Some enter direct from civil life and others are selected from the ranks. Figures shown for officers include officers designate.

The numbers shown for females comprise the Women's Services and female members of the Nursing Services. Certain professionally qualified female officers are not commissioned in the Women's Services but in the Branch or Corps appropriate to their qualifications. These officers of whom there were 219 at 1 January 1988 serving in the medical, dental, veterinary and legal specialisations, are included in the numbers of male officers.

4.1 Total MOD strength by area[1]

1 April

Thousands

	Actual						Estimates[3]	
	1983	1984	1985	1986	1987	1988[2]	1988	1989
UK based	529.5	525.0	500.3	492.0	483.9	462.1	464.6	462.0
Service	320.6	325.9	326.2	322.5	319.8	317.3	318.6	317.0
Civilian	208.9	199.1	174.1	169.5	164.0	144.8	146.0	145.0
Central Staffs	15.9	15.4	15.5	15.2	15.1	14.8	..	..
Service	0.8	0.8	1.2	1.2	1.2	1.3	..	..
Civilian	15.1	14.6	14.4	14.0	13.8	13.5	13.9	14.0
Navy[4]	131.8	126.6	123.6	119.3	116.8	98.8	..	..
Service	71.2	70.8	69.6	67.1	65.7	64.8	..	..
Civilian	60.6	55.8	54.0	52.2	51.1	34.1	34.5	34.1
Army	207.4	207.9	207.4	205.9	202.1	199.7	..	..
Service	157.9	160.4	161.2	160.2	158.6	157.2	..	..
Civilian	49.4	47.5	46.3	45.7	43.5	42.4	42.6	41.7
Air	113.0	115.6	114.8	114.1	114.0	113.3	..	..
Service	89.5	92.7	93.0	92.8	93.2	92.9	..	..
Civilian	23.5	22.9	21.8	21.3	20.8	20.5	20.7	20.9
PE	42.8	41.4	39.0	37.5	36.0	35.4	..	..
Service	1.1	1.1	1.3	1.2	1.1	1.2	..	..
Civilian	41.7	40.3	37.7	36.3	34.8	34.3	34.3	34.3
ROF	18.6	18.0	*	*	*	*	*	*
Civilian	18.6	18.0	*	*	*	*	*	*
Locally entered/engaged	44.0	43.5	42.6	42.3	41.8	41.1	41.4	41.3
Service	10.1	10.1	10.2	10.1	9.8	9.4	9.6	9.6
Civilian	33.8	33.4	32.4	32.2	32.1	31.7	31.8	31.7

1. Service numbers comprise members of the Regular Forces only.
2. Actual figures for the current year are as at 1 January.
3. Figures are those for financial costings.
4. Includes the Royal Marines.

4.2 Analysis of Service personnel by programme

Thousands

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
Total Service manpower [1]	334.7	333.1	335.8	334.2	331.5	327.6	327.5
Nuclear strategic force	2.4	2.3	2.1	2.1	2.0	2.0	2.1
Navy general purpose combat forces [2]	29.7	30.1	43.3	42.6	42.4	41.2	40.1
Submarines	2.9	2.9	2.9	2.9	2.9	2.9	3.0
Aircraft and ASW carriers	2.1	2.5	1.7	1.7	1.7	1.7	1.7
Amphibious forces	4.1	4.4	5.5	5.4	5.3	5.3	5.3
Destroyers and frigates	13.0	12.5	13.1	13.1	13.0	12.1	11.0
Mine counter-measures vessels	1.1	1.2	1.3	1.3	1.3	1.2	1.2
Other vessels	1.6	1.6	2.1	2.0	2.0	2.0	1.9
Aircraft	2.6	2.5	3.4	3.4	3.4	3.4	3.4
Fleet headquarters	1.2	1.2	3.0	2.9	3.0	2.9	2.9
Overseas shore establishments	1.1	2.1	1.2	1.0	1.0	1.0	1.0
Naval bases and operational support	•	•	9.1	8.9	8.8	8.7	8.7
European theatre ground Forces [3]	104.2	103.0	101.2	101.0	100.2	101.3	102.9
British Army of the Rhine	58.8	58.8	57.3	55.9	55.0	57.3	57.5
Berlin	3.0	3.1	3.0	3.0	3.0	3.0	3.0
Home forces	42.4	41.1	40.9	42.1	42.2	41.6	42.4
Other Army combat forces	14.7	14.9	14.9	14.7	15.0	15.2	14.5
Mediterranean	4.3	4.2	4.2	4.1	4.2	4.0	3.9
Hong Kong and other Far East	9.6	9.5	9.5	9.4	9.6	9.4	9.4
Other areas [3]	0.8	1.2	1.2	1.2	1.2	1.2	1.2
Air Force general purpose forces	58.6	58.1	59.6	60.2	61.0	61.2	61.5
Air defence	4.4	4.6	5.0	5.1	5.3	5.4	5.6
Offensive support	1.2	1.2	1.3	1.2	1.3	1.2	1.2
Strike/attack/reconnaissance	4.5	4.8	5.4	5.7	5.6	5.5	5.0
Maritime aircraft	1.7	1.7	1.7	1.7	1.7	1.6	1.8
Transport aircraft	3.7	3.7	3.8	3.7	3.7	3.7	3.6
Tanker aircraft	0.5	0.6	0.7	0.7	0.7	0.6	0.6
Other aircraft	3.9	3.8	4.0	3.9	3.8	3.5	3.4
Operational stations	20.2	19.0	19.2	19.4	19.8	20.1	20.4
Headquarters	2.7	2.7	2.6	2.5	2.6	2.6	2.6
General support	15.8	16.0	15.9	16.3	16.5	17.0	17.3
Reserve and Auxiliary formations [4]	3.0	3.0	2.9	2.9	2.9	3.0	2.9
Navy	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Army	2.4	2.4	2.3	2.3	2.4	2.5	2.5
Air Force	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Research and development	1.5	1.3	1.3	1.4	1.0	1.0	1.1
Ship construction and underwater warfare	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Ordnance and other Army	0.3	0.3	0.3	0.3	0.3	0.2	0.3
Military aircraft	0.3	0.3	0.3	0.3	0.2	0.2	0.2
Guided weapons	0.1	-	-	0.1	0.1	0.1	0.1
Other electronics	0.1	0.1	-	-	-	-	-
Other research and development	0.6	0.5	0.6	0.6	0.3	0.4	0.4
Training [5]	67.8	68.9	66.3	65.0	63.2	59.7	58.6
Service colleges	4.1	4.5	4.2	4.2	4.2	4.0	4.2
Navy	22.6	21.0	14.7	14.4	14.2	14.1	13.9
Army	26.9	27.2	30.4	29.8	28.6	25.8	25.4
Air Force	14.2	16.2	17.0	16.6	16.2	15.8	15.1
Equipment support and associated facilities in UK	10.7	10.2	8.0	8.1	8.0	8.0	9.0
Royal Dockyards	0.1	0.1	-	-	-	-	-
Other repair and maintenance	7.2	7.2	5.0	5.0	4.9	5.2	6.1
Storage and supply	3.2	2.7	2.8	2.9	2.9	2.7	2.8
Quality assurance	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Other support functions	42.1	41.3	36.1	36.0	35.8	35.0	34.8
Whitehall organisation	2.6	2.7	2.9	3.0	3.7	3.3	3.4
Local administration communications etc in UK	20.0	18.8	15.4	15.8	15.5	15.4	15.7
Meteorological services	•	•	•	•	•	•	•
Family and personnel services in UK	6.8	6.4	5.6	5.4	5.2	5.1	5.2
Service pensions	•	•	•	•	•	•	•
Other support services	12.7	13.4	12.2	11.8	11.4	11.2	10.5

1. These figures represent the average strengths provided for in the original Defence Estimates. Service figures include UK regular forces and locally entered personnel. Civilian figures include industrial and non-industrial staff plus all locally engaged staff.
2. The attribution of Naval manpower was changed in 1983-84, thus figures from 1984-85 are not fully comparable with those for earlier years.

4.3 Analysis of civilian staff by programme

Thousands

1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	
230.2	219.1	213.6	208.8	200.7	180.3	177.2	**Total civilian staff excluding ROFs** [1]
4.5	4.3	3.8	4.3	4.0	4.1	2.3	**Nuclear strategic force**
6.9	7.1	9.1	12.8	12.8	11.5	12.0	**Navy general purpose combat forces** [2]
*	*	*	*	*	*	*	Submarines
*	*	*	*	*	*	*	Aircraft and ASW carriers
-	-	0.1	0.1	0.1	0.1	0.1	Amphibious forces
*	*	*	*	*	*	*	Destroyers and frigates
*	*	*	*	*	*	*	Mine counter-measure vessels
4.9	5.2	5.0	5.0	5.0	4.4	4.1	Other vessels
0.1	-	-	-	-	-	-	Aircraft
0.2	0.2	1.8	1.8	1.8	1.6	2.1	Fleet headquarters
1.7	1.7	1.2	1.1	1.0	0.9	1.0	Overseas shore establishments
*	*	1.0	4.8	4.9	4.5	4.7	Naval bases and operation support
24.6	23.8	23.2	23.4	24.3	25.5	25.5	**European theatre ground forces**
24.6	23.8	23.2	23.4	24.3	23.7	23.5	British Army of the Rhine
*	*	*	*	*	0.1	0.1	Berlin
*	*	*	*	*	1.7	1.9	Home Forces [6]
6.9	6.9	7.0	6.9	6.9	6.4	6.1	**Other Army combat forces**
2.8	2.8	2.7	2.7	2.7	2.5	2.4	Mediterranean
4.1	4.0	4.1	4.0	4.0	3.7	3.5	Hong Kong and other Far East
-	0.1	0.2	0.2	0.2	0.2	0.2	Other areas
9.8	9.3	9.4	9.2	8.9	9.2	9.2	**Air Force general purpose forces**
0.1	0.1	0.1	0.1	0.1	0.1	0.1	Air defence
*	*	*	*	*	*	*	Offensive support
*	*	*	*	*	*	*	Strike/attack/reconnaissance
*	*	*	*	*	*	*	Maritime aircraft
*	*	*	*	*	*	*	Transport aircraft
*	*	*	*	*	*	*	Tanker aircraft
0.3	0.3	0.2	0.1	0.1	0.3	0.3	Other aircraft
4.5	4.3	4.4	4.5	4.3	3.9	3.9	Operational stations
0.7	0.6	0.5	0.5	0.5	0.6	0.6	Headquarters
4.2	4.0	4.2	4.0	3.9	4.3	4.3	General support
3.0	3.3	3.6	3.6	2.9	3.0	3.2	**Reserve and Auxiliary formations**
0.2	0.2	0.5	0.5	0.2	0.2	0.2	Navy
2.3	2.6	2.6	2.6	2.3	2.3	2.5	Army
0.5	0.5	0.5	0.5	0.4	0.5	0.5	Air Force
29.5	26.7	25.9	25.9	24.0	23.5	24.5	**Research and development**
3.3	3.6	4.4	4.4	3.9	3.8	3.7	Ship construction and underwater warfare
3.6	3.9	3.1	3.2	3.0	2.9	2.9	Ordnance and other Army
7.2	6.0	5.9	5.5	4.8	4.7	4.7	Military aircraft
2.4	2.1	2.3	2.3	2.0	1.9	1.9	Guided weapons
3.5	2.2	1.4	1.4	1.4	1.3	1.4	Other electronics
9.5	8.9	8.8	9.1	8.9	8.9	9.9	Other research and development
18.6	18.0	17.4	16.6	15.6	15.5	13.3	**Training**
2.8	2.7	2.3	2.3	2.1	2.1	1.5	Service colleges
3.4	3.0	2.5	2.2	2.0	2.0	1.4	Navy
9.9	9.7	10.4	9.9	9.3	9.3	8.4	Army
2.5	2.6	2.2	2.2	2.2	2.1	2.0	Air Force
73.9	70.4	67.2	60.3	56.6	38.5	37.6	**Equipment support and associated facilities** [5]
28.8	25.6	23.5	18.5	18.6	0.6	0.6	**in UK**
14.2	14.1	14.6	14.9	13.6	14.4	14.1	Royal Dockyards
23.2	23.0	21.7	21.2	19.3	19.3	19.2	Other repair and maintenance
7.7	7.7	7.4	5.7	5.1	4.2	3.7	Storage and supply
							Quality assurance
52.5	49.3	46.9	45.8	44.7	43.1	43.5	**Other support functions**
10.4	10.1	8.0	7.8	7.8	7.8	7.8	Whitehall organisation
26.1	28.0	28.8	28.3	27.7	26.5	26.5	Local administration communications, etc, in UK [4]
2.8	2.7	2.7	2.7	2.6	2.4	2.4	Meteorological services
8.6	7.2	6.1	5.9	5.4	5.3	5.6	Family and personnel services in UK
0.2	-	-	-	-	-	-	Service pensions
4.4	1.3	1.3	1.1	1.2	1.1	1.2	Other support services

3. For operational and security reasons, Army manpower in the South Atlantic is included in the European theatre ground forces total.
4. Regular whole-time serving personnel attached to Reserve and Auxiliary formations only.
5. Comprises administrative and training staff and the average number of trainees both at initial and higher levels, but excludes personnel on short courses, training carried out by front-line units and operational training.
6. Reallocation of numbers.

4.4 Strengths of UK Regular Forces[1]

1 April — Thousands

	Actual						Estimates[3]	
	1983	1984	1985	1986	1987	1988[2]	1988	1989
All Services	320.6	325.9	326.2	322.5	319.8	317.3	318.6	317.0
Male	305.2	309.7	309.8	306.5	303.7	301.3	302.6	300.9
Officers	40.3	40.1	40.3	40.4	40.8	40.4	40.9	41.0
Servicemen	264.9	269.6	269.5	266.1	262.8	260.9	261.6	259.9
Female	15.4	16.2	16.4	16.0	16.2	16.0	16.0	16.0
Officers	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.3
Servicewomen	13.3	14.1	14.2	13.8	13.9	13.7	13.8	13.7
Royal Navy	64.0	63.7	62.8	60.3	58.7	57.7	58.3	57.2
Male	60.1	59.8	59.1	56.8	55.3	54.4	54.9	53.8
Officers	9.1	8.8	8.9	9.0	9.1	9.1	9.2	9.2
Servicemen	51.0	51.0	50.1	47.8	46.2	45.3	45.7	44.6
Female	3.9	3.9	3.7	3.4	3.4	3.3	3.4	3.4
Officers	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Servicewomen	3.5	3.5	3.3	3.1	3.0	2.9	3.1	3.0
Royal Marines	7.8	7.6	7.6	7.6	7.8	7.9	7.8	7.7
Male	7.8	7.6	7.6	7.6	7.8	7.9	7.8	7.7
Officers	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Servicemen	7.1	7.0	7.0	7.0	7.2	7.2	7.1	7.0
Army	159.1	161.5	162.4	161.4	159.7	158.4	159.0	159.0
Male	152.9	155.0	155.6	154.8	153.2	152.0	152.7	152.6
Officers	16.3	16.2	16.3	16.3	16.4	16.1	16.5	16.5
Servicemen	136.6	138.7	139.3	138.6	136.9	135.9	136.2	136.1
Female	6.1	6.6	6.8	6.6	6.5	6.4	6.3	6.4
Officers	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Servicewomen	5.2	5.6	5.8	5.6	5.5	5.4	5.3	5.4
Royal Air Force	89.8	93.1	93.4	93.2	93.6	93.3	93.5	93.0
Male	84.5	87.3	87.5	87.2	87.3	87.0	87.2	86.8
Officers	14.2	14.4	14.5	14.5	14.7	14.5	14.6	14.6
Servicemen	70.2	73.0	73.0	72.7	72.6	72.5	72.6	72.2
Female	5.4	5.7	6.0	6.0	6.3	6.3	6.4	6.2
Officers	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.0
Servicewomen	4.6	5.0	5.1	5.2	5.4	5.4	5.4	5.3

1. Includes personnel undergoing initial training.
2. Actual figures for the current year are as at 1 January.
3. Figures are those used for the financial costings.

4.5 Strengths of trained UK Regular Forces[1]

1 April

Thousands

	Actual						Estimates[3]	
	1983	1984	1985	1986	1987	1988[2]	1988	1989
All Services	298.0	296.9	297.2	293.8	292.1	289.7	290.5	289.8
Male	283.6	282.0	282.0	278.9	277.3	274.9	275.6	275.0
Officers	36.2	35.7	35.7	35.7	35.8	35.8	36.0	35.9
Servicemen	247.4	246.3	246.2	243.1	241.5	239.1	239.6	239.0
Female	14.4	14.9	15.3	14.9	14.8	14.8	14.9	14.8
Officers	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2
Servicewomen	12.4	12.9	13.2	12.9	12.8	12.7	12.8	12.6
Royal Navy	58.6	58.2	57.2	54.7	52.5	51.9	52.4	52.1
Male	55.0	54.5	53.7	51.4	49.4	48.8	49.3	49.0
Officers	7.6	7.5	7.5	7.4	7.4	7.4	7.5	7.5
Servicemen	47.3	47.0	46.2	44.0	42.1	41.4	41.9	41.5
Female	3.6	3.7	3.6	3.3	3.0	3.1	3.1	3.1
Officers	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4
Servicewomen	3.1	3.3	3.2	2.9	2.7	2.7	2.7	2.7
Royal Marines	7.3	7.2	7.0	6.9	7.0	7.1	7.1	7.1
Male	7.3	7.2	7.0	6.9	7.0	7.1	7.1	7.1
Officers	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.6
Servicemen	6.7	6.7	6.4	6.3	6.5	6.6	6.5	6.5
Army	147.7	145.4	145.9	145.3	145.0	143.1	143.1	142.6
Male	142.1	139.5	139.7	139.2	139.1	137.2	137.3	136.8
Officers	15.4	15.1	15.1	15.1	15.2	15.3	15.3	15.2
Servicemen	126.7	124.4	124.6	124.2	123.9	122.0	122.0	121.5
Female	5.6	5.9	6.2	6.1	6.0	5.9	5.8	5.8
Officers	0.9	0.9	1.0	0.9	0.9	1.0	1.0	1.0
Servicewomen	4.7	5.0	5.2	5.1	5.0	4.9	4.9	4.8
Royal Air Force	84.5	86.1	87.1	86.9	87.6	87.6	87.8	88.0
Male	79.3	80.7	81.6	81.4	81.8	81.8	81.9	82.1
Officers	12.6	12.6	12.6	12.7	12.7	12.6	12.7	12.6
Servicemen	66.7	68.2	69.0	68.7	69.1	69.1	69.2	69.5
Female	5.2	5.4	5.5	5.6	5.8	5.9	6.0	5.9
Officers	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Servicewomen	4.5	4.7	4.8	4.9	5.1	5.1	5.2	5.1

1. Shows personnel who have completed initial training.
2. Actual figures for the current year are as at 1 January.
3. Figures are those used for the financial costings.

4.6 Strengths of the Reserves and Auxiliary Forces[1]

1 April — Thousands

	1982	1983	1984	1985	1986	1987	1988 [2]
All Services							
Regular Reserves	196.4	193.4	198.0	205.6	211.6	220.0	226.5
Male	195.0	192.0	196.5	204.0	209.9	218.2	224.6
Female	1.4	1.4	1.5	1.6	1.7	1.8	1.9
Volunteer Reserves and Auxiliary Forces	86.3	87.5	85.9	88.6	95.4	96.7	93.4
Male	78.6	79.7	78.0	80.1	85.9	86.8	83.6
Female	7.7	7.8	7.9	8.5	9.4	9.9	9.8
Royal Navy							
Regular Reserves:							
Male	24.6	23.7	23.3	23.1	23.9	24.2	24.4
Female	0.1	0.2	0.2	0.3	0.3	0.3	0.3
Volunteer Reserves and Auxiliary Forces:							
Male	4.3	4.2	4.1	4.0	4.2	4.3	4.4
Female	1.1	1.1	1.1	1.2	1.3	1.3	1.2
Royal Marines							
Regular Reserves:							
Male	2.2	2.2	2.2	2.2	2.3	2.3	2.4
Volunteer Reserves and Auxiliary Forces							
Male	1.0	1.1	1.1	1.1	1.2	1.2	1.3
Army							
Regular Reserves:							
Male	139.4	137.5	142.4	149.3	152.9	159.3	164.8
Female	0.7	0.7	0.8	0.9	1.0	1.1	1.1
Territorial Army:							
Male	66.3	67.0	65.5	67.2	70.6	71.0	67.7
Female	5.8	5.8	5.9	6.5	7.1	7.5	7.6
Ulster Defence Regiment							
Male	6.5	6.4	6.0	5.7	5.8	5.8	5.6
Female	0.7	0.7	0.7	0.7	0.7	0.8	0.7
Home Service Force:							
Male	*	0.3	0.3	0.9	3.0	3.3	3.2
Royal Air Force							
Regular Reserves:							
Male	28.8	28.5	28.5	29.4	30.7	32.3	33.1
Female	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volunteer Reserves and Auxiliary Forces:							
Male	0.5	0.7	0.9	1.1	1.1	1.3	1.3
Female	0.1	0.1	0.1	0.2	0.2	0.3	0.2

1. Includes the Ulster Defence Regiment (UDR) and the Home Service Force (HSF). Detailed numbers of full-time and part-time members of the UDR are given in Table 6.1. Recruitment to the HSF began in September 1982.

2. Figures for the current year are as at 1 January.

4.7 Strengths of locally entered personnel[1]

1 April

Number

		1982	1983	1984	1985	1986	1987	1988 [2]
MOD		44,876	43,957	43,470	42,626	42,343	41,816	41,104
Services		10,081	10,112	10,109	10,206	10,101	9,758	9,361
Civilians		34,795	33,845	33,361	32,420	32,242	32,076	31,743
UK								
Army		1,190	1,194	1,242	1,122	1,312	1,215	1,333
Continental Europe								
FRG	Civilians	23,851	23,251	22,876	22,667	22,656	22,637	22,464
Elsewhere	Civilians	746	747	805	809	822	917	899
Mediterranean								
Gibraltar	Army	43	44	48	49	49	53	53
	Civilians	2,600	2,524	2,418	1,699	1,661	1,582	1,562
Malta	Civilians	11	12	12	12	12	12	12
Cyprus	Civilians	2,712	2,637	2,645	2,611	2,557	2,523	2,385
Far East								
Hong Kong	Royal Navy	346	357	374	378	388	389	379
	Army	6,356	6,250	6,436	6,552	6,275	5,740	5,436
	Civilians	3,137	3,159	3,144	3,143	3,047	2,957	2,927
Brunei	Army	788	760	818	841	843	802	859
	Civilians	191	197	206	215	203	197	196
Nepal	Army	1,358	1,507	1,191	1,264	1,234	1,559	1,301
Elsewhere	Civilians	579	611	614	629	600	601	675
Other Areas	Civilians	968	707	641	635	684	650	623

1. Locally entered personnel are shown by country of deployment which may not be country of origin.

2. Figures for the current year are at 1 January.

4.8 Strengths of Cadet Forces[1]

1 April

Thousands

	1982	1983	1984	1985	1986	1987	1988 [2]
All Services	148.7	149.0	146.5	144.7	143.4	145.7	146.8
Male	145.1	144.1	139.4	135.4	132.5	132.1	131.7
Female	3.6	4.9	7.1	9.2	10.9	13.6	15.1
Royal Navy cadets [3]	28.7	29.4	28.4	28.4	28.0	27.5	27.5
Male	26.4	27.1	25.2	24.7	24.0	23.2	23.2
Female	2.2	2.4	3.2	3.7	4.0	4.3	4.3
Army cadets	74.1	74.5	73.8	72.1	70.9	71.2	71.2
Male	73.2	73.4	72.1	69.8	68.2	67.6	67.6
Female	0.9	1.1	1.7	2.3	2.7	3.6	3.6
Royal Air Force cadets	45.9	45.1	44.3	44.1	44.5	47.0	48.1
Male	45.6	43.6	42.1	40.9	40.3	41.3	40.9
Female	0.4	1.5	2.2	3.2	4.2	5.7	7.2

1. Includes the appropriate Service component of the Combined Cadet Force but excludes officers and training and administrative staff.

2. Figures for the current year are as at 1 January.

3. All figures now include Portsmouth Area Volunteer Cadet Corps and Sea Scouts.

4.9 Strengths of civilian staff employed in the Ministry of Defence: by type

1 April — Thousands

	Actual						Estimates [2]	
	1983	1984	1985	1986	1987	1988 [1]	1988	1989
MOD civilian staff	242.7	232.5	206.5	201.7	196.1	176.5	177.8	176.7
Non-industrial	116.1	113.7	105.2	104.1	103.6	98.6	99.2	99.8
Industrial	126.6	118.8	101.3	97.6	92.5	77.9	78.6	76.9
UK based [3]	208.9	199.1	174.1	169.5	164.0	144.8	146.0	145.0
Non-industrial	105.6	103.3	94.9	93.8	93.3	88.6	89.0	89.7
Industrial	103.3	95.8	79.1	75.6	70.7	56.2	57.0	55.3
United Kingdom (excluding Royal Ordnance Factories)	184.7	175.7	168.6	164.1	158.7	139.4	140.3	139.2
Non-industrial	96.3	93.9	90.8	89.8	89.3	84.6	84.9	85.5
Industrial	88.5	81.8	77.8	74.3	69.4	54.8	55.4	53.7
Royal Ordnance Factories	18.5	18.0	*	*	*	*	*	*
Non-industrial	5.1	5.3	*	*	*	*	*	*
Industrial	13.4	12.7	*	*	*	*	*	*
Overseas	5.6	5.4	5.5	5.3	5.3	5.3	5.7	5.8
Non-industrial	4.2	4.1	4.1	4.0	4.0	3.9	4.1	4.2
Industrial	1.4	1.3	1.3	1.3	1.3	1.4	1.6	1.6
Locally engaged:	33.8	33.4	32.4	32.2	32.1	31.7	31.8	31.7
Non-industrial	10.5	10.4	10.2	10.3	10.3	10.1	10.2	10.1
Industrial	23.3	23.0	22.2	22.0	21.8	21.7	21.6	21.6

1. Actual figures for the current year are as at 1 January.
2. Figures are those used for the financial costings.
3. UK based personnel are those recruited in the UK even though in some instances they may be serving overseas. Locally engaged staff are those recruited overseas.
4. Royal Dockyards (Devonport and Rosyth) staff are included up to 1987 only.

4.10 Strengths of occupational groups [1]

1 April — Thousands

	1982	1983	1984	1985	1986	1987	1988 [2]
All groups	108.1	105.6	103.3	94.9	93.8	93.3	88.6
Open structure and executive [3]	10.6	10.3	11.3	10.7	13.0	13.4	12.8
Administrative [4] (formerly clerical)	26.4	26.0	25.2	23.5	23.2	24.2	22.8
Secretarial	5.8	5.7	5.5	5.2	5.2	5.1	5.0
Supervisory	4.4	4.3	4.2	3.6	3.6	3.5	3.1
Professional and technological	23.9	23.4	22.7	19.5	18.3	18.1	14.7
Science	9.7	9.6	8.9	7.8	6.4	6.4	6.4
Cartographic and hydrographic	1.1	1.0	1.0	1.0	1.0	1.0	1.0
Retired officers	1.9	1.8	1.8	1.8	1.8	1.7	1.7
Police	3.7	3.6	3.6	3.4	3.7	3.9	4.0
Education	2.2	2.1	2.0	2.0	1.9	1.8	1.8
Medical and nursing	0.9	0.8	0.8	0.7	0.7	0.6	0.6
Others	17.6	17.0	16.2	15.7	15.2	13.6	14.7

1. This table covers all UK based non-industrial staff employed within the Ministry of Defence, including, until 1984, those working at the Royal Ordnance Factories and, until 1987, those working at the Royal Dockyards (Devonport and Rosyth).
2. Figures for the current year are as at 1 January.
3. The open structure was extended in 1984 to Senior Principal and equivalent grades and in 1986 to Principal and equivalent grades thus drawing in staff who were formerly included in the professional, technical, science and other occupational groups.
4. A new administrative group was created from 1 January 1987 covering the former clerical group together with data processing grades who were formerly included in the 'Others' group

4.11 Civilian apprentices:[1] type of establishment

1 April

Number

	1982	1983	1984	1985	1986	1987	1988 [2]
All apprentices	7,318	6,274	5,297	4,032	4,069	4,053	2,809
Royal Dockyards [3]	2,924	2,157	1,787	1,544	1,578	1,478	257
Stores and maintenance establishments:							
Navy	377	330	285	287	279	397	405
Army	669	581	417	384	381	395	398
Air Force	260	234	227	191	184	209	195
Research and development establishments	1,355	1,225	1,085	1,087	1,041	1,020	1,008
Royal Ordnance Factories	1,068	947	823	*	*	*	*
Other establishments	665	800	673	539	606	554	546

1. Includes female apprentices.
2. Figures for the current year are as at 1 January.
3. Includes the Clyde submarine base. Includes Devonport and Rosyth up to 1987 only.

4.12 Civilian apprentices:[1] location

1 April

Number

		1982	1983	1984	1985	1986	1987	1988 [2]
United Kingdom	Total	7,318	6,274	5,297	4,032	4,069	4,053	2,809
	ROFs	1,068	947	823				
	Others	6,250	5,327	4,474	4,032	4,069	4,053	2,809
England	Total	5,873	4,972	4,058	2,852	2,871	2,815	2,205
	ROFs	948	835	727				
	Others	4,925	4,137	3,331	2,852	2,871	2,815	2,205
Wales	Total	376	377	353	267	273	291	277
	ROFs	57	55	48				
	Others	319	322	305	267	273	291	277
Scotland	Total	1,037	897	860	892	912	936	319
	ROFs	63	57	48				
	Others	974	840	812	892	912	936	319
Northern Ireland	Total	32	28	26	21	13	11	8
Standard Regions of England								
North	Total	89	54	43	7	3	3	3
	ROFs	51	41	35				
Yorks and Humberside	Total	254	283	220	39	37	31	29
	ROFs	196	165	148				
East Midlands	Total	351	294	237	107	89	78	68
	ROFs	161	134	115				
South East	Total	2,596	2,218	1,693	1,364	1,419	1,411	1,482
	ROFs	128	123	108				
South West	Total	1,904	1,565	1,388	1,178	1,166	1,126	482
	ROFs	39	30	26				
West Midlands	Total	246	196	166	141	141	130	124
North West	Total	433	362	311	16	16	16	17
	ROFs	373	342	295				

1. Apprentices at Royal Dockyards (Devonport and Rosyth) are included up to 1987 only.
2. Includes female apprentices.
3. Figures for the current year are as at 1 January.

4.13 Deployment of UK manpower: United Kingdom[1]

1 July

Thousands

	1981	1982	1983	1984	1985	1986	1987
United Kingdom	465.9	423.2	429.8	422.6	397.2	391.6	369.3
Services	245.0	215.2	228.9	230.4	229.6	228.3	228.1
Civilian	220.9	208.0	200.9	192.2	167.7	163.3	141.2
National totals[2]							
England	394.8	371.6	363.8	355.2	333.7	328.2	311.3
Services	207.7	195.9	195.1	194.5	193.3	191.7	190.9
Civilian	187.1	175.7	168.7	160.7	140.4	136.5	120.4
Wales	15.7	15.1	14.9	14.6	12.8	12.5	12.2
Services	6.3	6.1	6.1	6.2	6.3	6.3	6.1
Civilian	9.4	9.0	8.8	8.4	6.5	6.2	6.0
Scotland	40.2	39.5	39.3	40.9	38.2	37.6	31.8
Services	18.9	19.0	18.7	20.6	20.1	19.7	19.6
Civilian	21.3	20.5	20.6	20.3	18.1	17.9	12.2
Northern Ireland[3]	14.7	13.8	13.0	12.7	12.4	13.2	14.0
Services	11.6	10.9	10.2	10.0	9.7	10.5	11.4
Civilian	3.1	2.9	2.8	2.7	2.7	2.7	2.6
Standard regions of England							
North	7.2	7.3	7.0	6.9	5.9	5.4	5.3
Services	1.2	1.7	1.5	1.7	2.3	1.9	2.1
Civilian	6.0	5.6	5.5	5.2	3.6	3.5	3.2
Yorkshire and Humberside	22.6	22.1	23.5	23.1	21.1	21.1	20.5
Services	13.6	13.5	14.9	14.8	14.8	14.8	14.5
Civilian	9.0	8.6	8.6	8.3	6.3	6.3	6.0
East Midlands	22.6	19.6	19.3	19.0	17.6	18.1	17.2
Services	14.4	12.7	12.9	13.0	12.9	13.6	13.1
Civilian	8.2	6.9	6.4	6.0	4.7	4.5	4.1
East Anglia	18.1	18.1	18.1	18.5	19.9	19.0	18.6
Services	15.6	15.7	15.6	15.9	16.3	16.3	16.0
Civilian	2.5	2.4	2.5	2.6	2.6	2.7	2.6
South East	188.3	173.9	166.7	158.5	153.9	149.5	149.3
Services	97.9	90.2	89.0	86.7	87.3	84.6	86.7
Civilian	90.4	83.7	77.7	71.8	66.6	64.9	62.6
South West	101.7	98.8	98.4	96.7	92.1	91.4	78.5
Services	53.2	51.9	51.5	50.7	48.1	49.0	48.5
Civilian	48.5	46.9	46.9	46.0	44.0	42.4	30.0
West Midlands	20.4	19.2	18.4	19.3	18.9	18.7	17.5
Services	9.7	8.7	8.1	9.5	9.4	9.4	8.5
Civilian	10.7	10.5	10.3	9.8	9.5	9.3	9.0
North West	14.0	12.5	12.4	13.2	5.3	5.2	4.4
Services	2.2	1.4	1.5	2.1	2.2	2.2	1.5
Civilian	11.8	11.1	10.9	11.1	3.1	3.0	2.9

1. This table identifies the deployment of UK Regular Forces and MOD civilians. It includes Royal Navy and Royal Marines personnel on board ships in home waters. It also includes staff in Royal Ordnance Factories up to 1984 and in the Royal Dockyards up to 1986.

2. The source from which these totals are compiled for the Services is different from that used to obtain the United Kingdom element of global deployments. Consequently, the sum of the national figures can differ from the United Kingdom figures.

3. The figures for Northern Ireland include all personnel from other parts of the United Kingdom and from the British Army of the Rhine who are serving on emergency tours of duty, but exclude the Ulster Defence Regiment.

113

4.14 Deployment of UK manpower: overseas

1 April

Number

	1981	1982	1983	1984	1985	1986	1987
All overseas areas [1]							
Royal Navy and Royal Marines	7,203	9,564	7,826	7,698	5,321	5,388	7,721
Army [2]	71,169	72,817	73,595	70,140	70,641	69,212	70,998
Royal Air Force	14,787	15,000	16,365	17,366	17,202	16,978	16,832
Civilians	5,948	5,708	5,613	5,437	5,455	5,379	5,303
Federal Republic of Germany							
Royal Navy and Royal Marines	37	38	19	256	18	6	253
Army [2]	58,928	60,044	57,358	55,163	55,997	56,222	55,702
Royal Air Force	10,244	10,411	10,047	10,186	10,571	10,690	10,881
Civilians	2,093	2,044	1,913	1,849	1,876	1,827	1,779
Elsewhere in Continental Europe [3]							
Royal Navy and Royal Marines	382	384	360	838	867	514	824
Army	3,977	4,126	3,931	3,909	3,853	3,877	3,830
Royal Air Force	1,692	1,727	1,740	1,803	1,623	1,591	1,674
Civilians	70	73	101	101	101	98	101
Gibraltar							
Royal Navy and Royal Marines	728	679	752	816	733	766	529
Army	770	832	808	815	771	744	781
Royal Air Force	412	421	431	465	455	405	387
Civilians	275	251	233	186	109	104	107
Cyprus							
Royal Navy and Royal Marines	15	16	16	20	19	16	20
Army	3,190	3,377	3,404	3,307	3,177	3,317	3,346
Royal Air Force	1,381	1,383	1,412	1,626	1,539	1,610	1,584
Civilians	368	357	342	323	293	284	266
Elsewhere in Mediterranean, Near East and Gulf							
Royal Navy and Royal Marines	4,338	6,021	907	2,185	552	546	524
Army	233	252	233	233	238	232	186
Royal Air Force	89	84	106	114	104	126	130
Civilians	9	9	11	9	11	7	5
Hong Kong							
Royal Navy and Royal Marines	334	311	292	275	272	275	319
Army	1,985	1,969	1,917	1,962	1,964	1,842	1,825
Royal Air Force	248	249	264	268	268	269	265
Civilians	386	400	291	272	298	288	282
Elsewhere in Far East							
Royal Navy and Royal Marines	58	61	57	58	114	334	61
Army	201	218	229	235	235	222	224
Royal Air Force	18	21	17	13	9	7	9
Civilians	22	22	21	22	15	20	22
Other locations (Dentro de ésto, se considera Malvinas).							
Royal Navy and Royal Marines	1,311	2,054	5,423	3,250	2,746	2,931	5,191
Army	1,885	1,999	5,715	4,516	4,406	2,756	4,398
Royal Air Force	703	704	2,348	2,891	2,633	2,280	1,902
Civilians	2,725	2,552	2,701	2,675	2,752	2,751	2,741

1. The table identifies the deployment of UK Regular Forces and MOD civilians. The figures include service personnel who are on loan to countries in the areas shown. The Royal Navy, Royal Marine and civilian figures include personnel who are at sea in each area at the situation date. All Defence Attaches and Advisers and their staffs are included under 'Other locations' and not identified within specific areas.

2. Personnel serving in Northern Ireland on emergency tours of duty but remaining under the command of the Commander-in-Chief, British Army of the Rhine, are included in these numbers. Personnel serving on emergency tours of duty in other overseas areas are included in the numbers for that area.

3. These figures include personnel stationed in Berlin and Sardinia.

4.15 Recruitment of UK Regular Forces: by Service

Number

	Financial years					1 Apr - 31 Dec	
	1982-83	1983-84	1984-85	1985-86	1986-87	1986	1987
All Services	21,647	36,991	34,721	32,651	34,049	25,197	24,553
Male	19,342	33,760	32,076	30,407	31,147	23,026	22,640
Officers	2,136	2,544	2,716	2,799	2,920	2,075	1,834
Servicemen	17,206	31,216	29,360	27,608	28,227	20,951	20,806
Female	2,305	3,231	2,645	2,244	2,902	2,171	1,913
Officers	232	305	300	327	360	246	265
Servicewomen	2,073	2,926	2,345	1,917	2,542	1,925	1,648
Royal Navy	3,584	4,785	4,582	4,276	5,336	3,494	3,588
Male	3,078	4,223	4,231	3,987	4,791	3,138	3,184
Officers	395	445	537	568	592	394	341
Servicemen	2,683	3,778	3,694	3,419	4,199	2,744	2,843
Female	506	562	351	289	545	356	404
Officers	13	8	14	32	36	25	19
Servicewomen	493	554	337	257	509	331	385
Royal Marines	447	447	954	1,093	1,233	880	732
Male	447	447	954	1,093	1,233	880	732
Officers	28	33	43	65	62	62	52
Servicemen	419	414	911	1,028	1,171	818	680
Army	13,071	22,348	22,278	20,268	19,918	15,204	15,379
Male	11,679	20,811	20,914	19,173	18,718	14,278	14,516
Officers	1,157	1,295	1,435	1,374	1,362	940	929
Servicemen	10,522	19,516	19,479	17,799	17,356	13,338	13,587
Female	1,392	1,537	1,364	1,095	1,200	926	863
Officers	132	173	160	151	154	93	115
Servicewomen	1,260	1,364	1,204	944	1,046	833	748
Royal Air Force	4,545	9,411	6,907	7,014	7,562	5,619	4,854
Male	4,138	8,279	5,977	6,154	6,405	4,730	4,208
Officers	556	771	701	792	904	679	512
Servicemen	3,582	7,508	5,276	5,362	5,501	4,051	3,696
Female	407	1,132	930	860	1,157	889	646
Officers	87	124	126	144	170	128	131
Servicewomen	320	1,008	804	716	987	761	515

Definitions for Table 4.16

Pre-cadets are Army officer candidates who undertake a short period of service as soldiers prior to appearing before the Army's officer selection board.

Officer cadets are entrants who have been selected to serve as officers but who are required to complete successfully a period of training prior to being commissioned.

University cadets are students at universities and comparable educational establishments who have been appointed as midshipmen in the Royal Navy, as acting second lieutenants in the Royal Marines or as officers in the Army and Royal Air Force and who, on graduation, will take up whole-time duty.

4.16 Recruitment of male UK Regular Forces: by category

Number

	Financial years					1 Apr - 31 Dec	
	1982-83	1983-84	1984-85	1985-86	1986-87	1986	1987
All Services	19,342	33,760	32,076	30,407	31,147	23,026	22,640
Officers	2,136	2,544	2,716	2,799	2,920	2,075	1,834
Pre-cadets	553	577	689	699	661	475	423
Officer Cadets	702	875	879	871	926	622	469
University cadets	168	241	235	273	277	242	239
Specialists, graduates and other entrants	713	851	913	956	1,056	736	703
Servicemen	17,206	31,216	29,360	27,608	28,227	20,951	20,806
Adults [1]	9,120	19,056	16,307	15,268	15,708	11,265	11,330
Apprentices	2,354	2,370	2,536	2,247	2,147	1,618	1,631
Young Soldiers/Airmen, Juniors [2]	5,732	9,790	10,517	10,093	10,372	8,068	7,845
Royal Navy	3,078	4,223	4,231	3,987	4,791	3,138	3,184
Officers	395	445	537	568	592	394	341
Officer cadets	261	242	290	306	313	193	181
University cadets	24	45	47	71	69	50	40
Specialists, graduates and other entrants	110	158	200	191	210	151	120
Servicemen	2,683	3,778	3,694	3,419	4,199	2,744	2,843
Adults [1]	1,187	1,570	1,469	1,505	2,037	1,163	1,206
Apprentices	536	542	570	495	437	276	296
Juniors [2]	960	1,666	1,655	1,419	1,725	1,305	1,341
Royal Marines	447	447	954	1,093	1,233	880	732
Officers	28	33	43	65	62	62	52
Officer cadets	17	24	24	35	34	34	30
University cadets	1	3	6	3	5	5	7
Specialists, graduates and other entrants	10	6	13	27	23	23	15
Servicemen	419	414	911	1,028	1,171	818	680
Adults [1]	247	263	590	631	794	524	468
Juniors [2]	172	151	321	397	377	294	212
Army	11,679	20,811	20,914	19,173	19,918	14,278	14,516
Officers	1,157	1,295	1,435	1,374	1,362	940	929
Pre-cadets	553	577	689	699	661	475	423
Officer cadets	206	266	267	204	188	132	115
University cadets	76	90	79	87	92	87	80
Specialists, graduates and other entrants	322	362	400	384	421	246	311
Servicemen	10,522	19,516	19,479	17,799	17,356	13,338	13,587
Adults [1]	4,959	11,478	10,246	8,979	8,541	6,348	6,708
Young Soldiers [2]	142	1,146	1,817	1,395	1,291	991	998
Apprentices	1,580	1,564	1,703	1,488	1,464	1,198	1,191
Juniors [2]	3,841	5,328	5,713	5,937	6,060	4,801	4,690
Royal Air Force	4,138	8,279	5,977	6,154	6,405	4,730	4,208
Officers	556	771	701	792	904	679	512
Officer cadets	218	343	298	326	391	263	143
University cadets	67	103	103	112	111	100	112
Specialists, graduates and other entrants	271	325	300	354	402	316	257
Servicemen	3,582	7,508	5,276	5,362	5,501	4,051	3,696
Adults [1]	2,727	5,745	4,002	4,153	4,336	3,230	2,948
Young Airmen [2]	617	1,499	1,011	945	919	677	604
Apprentices	238	264	263	264	246	144	144

1. Entrants over the age of 17½, but excluding RN and RAF apprentices. (In the Army all apprentices are below the age of 17½ on entry).

2. Young soldiers are entrants between the ages of 17 and 17½; Army juniors are entrants below the age of 17; young airmen and RN, RM juniors are entrants below the age of 17½ (excluding apprentices in all cases).

4.17 Outflow of UK Regular Forces: by Service [1]

Number

	Financial years					1 Apr - 31 Dec	
	1982-83	1983-84	1984-85	1985-86	1986-87	1986	1987
All Services	28,657	31,926	34,554	36,521	36,961	27,809	27,167
Male	26,108	29,468	32,095	33,881	34,194	25,705	25,036
Officers	3,214	3,372	3,194	3,388	3,258	2,515	2,660
Servicemen	22,894	26,096	28,901	30,493	30,936	23,190	22,376
Female	2,549	2,458	2,459	2,640	2,767	2,104	2,131
Officers	324	304	298	351	334	243	251
Servicewomen	2,225	2,154	2,161	2,289	2,433	1,861	1,880
Royal Navy	4,617	5,095	5,572	6,915	6,919	5,104	4,592
Male	4,085	4,514	5,011	6,356	6,295	4,648	4,131
Officers	750	796	567	648	620	455	513
Servicemen	3,335	3,718	4,444	5,708	5,675	4,193	3,618
Female	532	581	561	559	624	456	461
Officers	59	73	49	55	46	40	38
Servicewomen	473	508	512	504	578	416	423
Royal Marines	625	701	913	1,088	1,068	804	709
Male	625	701	913	1,088	1,068	804	709
Officers	61	64	55	68	46	34	36
Servicemen	564	637	858	1,020	1,022	770	673
Army	17,178	19,959	21,448	21,301	21,761	16,419	16,707
Male	15,960	18,854	20,286	19,999	20,473	15,415	15,736
Officers	1,491	1,701	1,703	1,790	1,654	1,319	1,330
Servicemen	14,469	17,153	18,583	18,209	18,819	14,096	14,406
Female	1,218	1,105	1,162	1,302	1,288	1,004	971
Officers	165	130	151	195	167	121	121
Servicewomen	1,053	975	1,011	1,107	1,121	883	85
Royal Air Force	6,237	6,171	6,621	7,217	7,213	5,482	5,159
Male	5,438	5,399	5,885	6,438	6,358	4,838	4,460
Officers	912	811	869	882	938	707	781
Servicemen	4,526	4,588	5,016	5,556	5,420	4,131	3,679
Female	799	772	736	779	855	644	699
Officers	100	101	98	101	121	82	92
Servicewomen	699	671	638	678	734	562	607

1. Comprises all those who left the Regular Forces and includes deaths.

4.18 Outflow of UK Regular Forces, by category

Number

	Financial years					1 Apr - 31 Dec	
	1982-83	1983-84	1984-85	1985-86	1986-87	1986	1987
All Services	28,657	31,926	34,554	36,521	36,961	27,809	27,167
Male officers	3,214	3,372	3,194	3,388	3,258	2,515	2,660
Commissioned officers	2,530	2,829	2,577	2,678	2,492	1,920	2,126
Time and age expiries or exercise of right at option point	1,243	1,276	1,106	1,096	972	729	912
Premature release at own request [1]	843	917	1,094	1,223	1,121	903	952
Redundancies	52	308	10	7	6	6	-
Medical reasons and deaths	142	102	104	110	106	83	76
Other reasons	250	226	263	242	287	199	186
Officers designate	684	543	617	710	766	595	534
At own request	151	84	73	119	127	97	75
Medical reasons and deaths	6	13	12	8	26	14	12
Other reasons	527	446	532	583	613	484	447
Servicemen	22,894	26,096	28,901	30,493	30,936	23,190	22,376
Before completion of 6 months service	2,712	5,580	5,925	5,437	6,299	4,492	4,541
By exercise of right	1,787	3,655	4,009	3,863	4,414	3,092	3,008
Unsatisfactory, disciplinary and other reasons	839	1,805	1,695	1,429	1,721	1,278	1,439
Medical reasons and deaths	85	116	215	144	161	119	93
Compassionate release	1	4	6	1	3	3	1
After completion of 6 months service	20,182	20,516	22,976	25,056	24,637	18,698	17,835
Time and age expiries or exercise of right at option point	9,986	10,779	11,501	12,383	13,311	9,923	9,269
Premature release at own request [1]	3,853	4,221	6,113	7,215	6,742	5,178	5,181
Redundancies	158	346	422	505	147	59	10
Unsatisfactory, disciplinary and other reasons	4,821	4,010	3,538	3,379	3,067	2,449	2,334
Medical reasons and deaths	1,218	948	1,194	1,408	1,197	956	938
Compassionate release	146	212	208	166	173	133	103
Female officers [2]	324	304	298	351	334	243	251
Time and age expiries or exercise of right at option point	182	165	162	201	182	132	124
At own request	127	112	108	110	120	88	100
Medical reasons and deaths	7	6	12	3	7	4	5
Other reasons	8	21	16	37	25	19	22
Servicewomen	2,225	2,154	2,161	2,289	2,433	1,861	1,880
Time and age expiries or exercise of right at option point	77	68	58	96	136	104	124
By exercise of right to give 18 months notice	331	308	305	349	459	348	289
At own request	254	329	307	296	373	289	254
Marriage, pregnancy	1,336	1,199	1,261	1,325	1,171	900	974
Unsatisfactory, disciplinary and other reasons	200	198	185	182	237	175	185
Medical reasons and deaths	17	43	41	36	53	41	49
Compassionate release	10	9	4	5	4	4	5

1. The numbers shown as premature release at own request, for both officers and servicemen, relate only to trained personnel.
2. As the numbers for female officers designate are small, they have been included in those for female officers.

4.21 Indices and illustrative rates of military salary

		1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
		1980/81 = 100						
Military salary index: all ranks [1]		110.6	117.1	125.7	132.1	145.1	153.4	165.5
Senior Officers (Major General and above)		107.1	122.2	130.5	142.6	156.3	176.4	185.5
Officers (up to Brigadier)		113.6	121.9	132.5	139.7	155.2	164.9	178.7
Other ranks (Sergeant and above)		111.2	118.1	127.0	133.5	146.9	155.5	168.3
Other ranks (up to Corporal)		109.1	114.9	122.4	128.5	140.3	147.9	159.0
		£						
Illustrative rates of military salary (in terms of Army ranks) [2, 3]								
General		34,000	37,748	40,500	45,501	60,000	62,100	65,000
Brigadier		20,900	22,750	25,001	27,101	29,401	32,160	34,089
Colonel	*after 4 years in the rank*	18,400	19,998	21,879	23,699	25,711	28,123	29,95(
Lieutenant Colonel	*after 4 years in the rank*	15,801	17,199	18,801	20,451	22,170	24,276	25,975
Major	*after 4 years in the rank*	12,399	13,301	14,527	15,699	16,976	18,385	19,581
Captain	*after 3 years in the rank*	9,702	10,351	11,298	12,249	13,202	14,217	15,141
Lieutenant	*after 2 years in the rank*	7,599	8,048	8,777	9,479	10,191	10,976	11,690
Second Lieutenant		5,949	6,249	6,500	6,986	7,490	8,037	8,520
Warrant Officer I	*band 6, scale C; after 18 years* [4]	10.129	10,800	11,694	12,560	13,505	14,571	15,511
Warrant Officer II	*band 6, scale C; after 18 years* [4]	9,636	10,257	11,068	11,888	12,786	13,793	14,691
Staff Sergeant	*band 5, scale C; after 18 years* [4]	8,519	9,030	9,673	10,384	11,169	12,038	12,825
Sergeant	*band 5, scale C; after 12 years* [5]	7,917	8,388	9,018	9,694	10,417	11,213	11,946
Corporal	*class 1, band 2, scale C*	7,125	7,508	8,037	8,651	9,289	9,994	10,658
Lance Corporal	*class 1, band 1, scale C*	5,814	6,106	6,493	6,924	7,428	7,979	8,466
Private	*class 2, band 1, scale C*	4,811	5,048	5,366	5,720	6,081	6,475	6,837

1 Indices cover adult male UK Regular Forces and are based on the average rate of basic pay through the year. Weightings are based on paid strength at April 1984 but exclude doctors, dentists, chaplains, legal and educational officers.

2 In the illustrative rates for officers, the mid point of the incremental scales has been used. For servicemen, the pay bandings have been selected which contain the largest number at each rank. Within each rank servicemen are divided for the purposes of pay into classes, bands and scales according to their employment classification, the nature of their specialisation and the period of commitment to serve. All forms of additional pay, e.g flying pay, diving pay, parachute pay are excluded since they are not paid to the majority of Service personnel.

3 Salaries shown are the rates payable from 1 April in each year except in the following cases:
In 1983-84, increases for Senior Officers were delayed and phased to 1 August 1983 and 1 January 1984. Rates for Generals and equivalent were £40,500 at August and £42,750 at January.
In 1984-85, increases for all ranks were phased to 1 April & 1 November 1984. The 1 November salaries are shown in the table. At 1 April, the salary for General and equivalent was £44,030; the salaries for other officers were between 4.2% and 5.3% lower than the 1 November levels and the salaries for servicemen were between 3.5% and 4.3% lower than the 1 November levels.
In 1985-86, increases for Senior Officers were delayed and phased to 1 July 1985 and 1 March 1986. Rates for Generals and equivalent were £52,750 at July and £60,000 at March.
In 1986-87 increases for all ranks were delayed until 1 July 1986.
In 1987-88, increases for Senior Officers were phased to 1 April and 1 October 1987. Rates for Generals and equivalent were £64,739 at April and £65,000 at October.

4. Includes length of service increments - £365 (1981-82), £383.25 (1982-83), £402.60 (1983-84), £401.50 (1984-85), £456.25 (1985-86), £492.75 (1986-87) and £530.70 (1987-88).

5 Includes length of service increments — £200.75 (1981-82), £219 (1982-83), £237.90 (1983-84), £237.25 (1984-85), £273.75 (1985-86), £292 (1986-87) and £311.10 (1987-88).

5.1 Social expenditure included in the Defence budget[1]

The Defence budget provides certain social services for members of the Armed Forces and their families. These are also of benefit to UK-based civilians serving overseas. The figures shown for Education cover the education of Service personnel, the Service Children's Education Authority and contributions towards the cost of educating Service children in other schools. The cost of Service pensions which do not relate to the current Defence effort, is also shown. Civil superannuation, not covered by the Defence budget is not included in this table.

£ million

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
Total expenditure	1,118	1,222	1,343	1,431	1,531	1,609	1,700
Medical services[2]	207	211	231	223	243	244	260
Education[3]	149	170	164	175	183	189	200
Married accommodation[4]	105	86	117	127	126	126	138
Service pensions[5]	657	755	831	906	979	1,050	1,102

1 The figures given in this table are based on the original Estimates and reflect the price levels of the Estimates for the years in question.

2 Net of repayments for civilian patients not entitled to treatment in Service hospitals.

3 Comprising education allowances, the cost of Service schools in table 5.10 and adult education. It is difficult to separate the cost of Service schools from the cost of adult education but it is assessed that SCEA schools are approximately one third of the total.

4 Net of rents payable for married quarters.

5 Expenditure on Service pensions is included above as a social payment because it does not relate to the current Defence effort.

5.2 Strengths of uniformed medical staff of the UK Regular Forces[1]

1 April

Number

	1982	1983	1984	1985	1986	1987	1988[2]
Qualified doctors:	1,180	1,165	1,171	1,199	1,210	1,212	1,217
Royal Navy	295	285	289	283	291	289	289
Army	493	507	515	539	549	560	567
Royal Air Force	392	373	367	377	370	363	361
Qualified dentists:	399	406	399	400	389	399	404
Royal Navy	101	101	92	92	80	81	81
Army	182	197	197	198	197	200	204
Royal Air Force	116	108	110	110	112	118	119
Support staff;[3]	8,784	8,856	8,917	8,839	8,389	8,205	8,204
Royal Navy	1,913	1,863	1,747	1,648	1,473	1,392	1,530
Army	4,688	4,859	5,089	5,121	4,912	4,856	4,596
Royal Air Force	2,183	2,134	2,081	2,070	2,004	2,020	2,078

1 Includes staff employed at units (including ships) and in hospitals.

2 Figures for the current year are as at 1 January.

3 Includes all members of the Nursing Services/Nursing Corps.

5.3 Service hospitals

This shows the number of hospitals in the United Kingdom and in areas abroad where there is a significant British military presence. These hospitals take as patients members of all 3 Services and their dependants. In the United Kingdom, hospitals take other civilian patients under arrangements agreed with the National Health Service. The hospitals abroad also admit UK-based MOD civilians and their dependants and certain other personnel (eg Hong Kong Government employed personnel and Gurkhas and their dependants).

	1981	1982	1983	1984	1985	1986	1987[6]
Number of Service hospitals[1]							
United Kingdom[2]	11	11	10	9	9	9	9
Overseas[3]	10	10	11	11	10	10	9
Average number of available beds							
United Kingdom[2]	2,286	2,195	2,113	1,956	1,986	1,959	1,845
Overseas[3]	1,269	1,252	1,261	1,218	1,184	1,117	1,029
Average number of occupied beds							
United Kingdom	1,468	1,351	1,302	1,248	1,231	1,161	1,102
Overseas	739	708	694	661	599	542	493
Average percentage of beds occupied[4]							
United Kingdom	64.2	61.5	61.6	63.8	62.0	59.2	59.7
Overseas	58.2	56.6	55.1	54.3	50.6	48.6	47.9
Total number of inpatient admissions							
United Kingdom	75,900	71,310	69,897	71,560	75,084	72,117	[illegible],894
UK Service personnel	28,565	26,984	26,926	26,884	27,923	26,342	[illegible],939
Service dependants	14,422	14,112	12,825	12,708	12,570	11,386	10,776
NHS/others	32,913	30,214	30,146	31,968	34,591	34,389	35,179
Overseas	42,330	42,706	43,563	43,469	41,746	40,641	39,210
UK Service personnel	12,675	13,566	14,310	14,522	13,767	13,637	12,918
Service dependants	21,542	23,191	22,914	22,154	22,058	22,151	22,084
Others	8,113	5,949	6,339	6,793	5,921	4,853	4,208
Average number of admissions per bed							
United Kingdom	33.1	32.5	33.1	36.6	37.8	36.8	39.0
UK Service personnel	12.5	12.3	12.7	13.7	14.1	13.4	14.1
Service dependants	6.3	6.4	6.1	6.5	6.3	5.8	5.8
NHS/others	14.4	13.8	14.3	16.3	17.4	17.6	19.1
Overseas	33.4	34.1	34.5	35.7	35.3	36.4	38.1
UK Service personnel	10.0	10.8	11.3	11.9	11.6	12.2	12.6
Service dependants	17.0	18.5	18.2	18.2	18.6	19.8	21.5
Others	6.4	4.8	5.0	5.6	5.0	4.3	4.1
Average days in hospital per patient							
United Kingdom	7.1	6.9	6.8	6.4	6.0	5.9	5.6
UK Service personnel	8.0	8.1	7.8	7.4	6.9	6.8	6.3
Service dependants	5.2	5.1	5.0	4.5	4.5	4.1	4.1
NHS/others	7.0	6.7	6.7	6.2	5.8	5.8	5.5
Overseas	6.4	6.1	5.8	5.6	5.2	4.9	4.6
UK Service personnel	7.0	6.6	6.2	5.8	5.5	5.0	4.7
Service dependants	5.2	5.0	4.8	4.5	4.0	3.8	3.7
Others	8.6	8.9	8.5	8.4	9.0	9.5	8.6
Outpatients: total attendances[5]							
United Kingdom	401,370	399,672	369,398	381,640	373,653	373,767	355,183
UK Service personnel	133,048	134,342	118,020	123,095	119,295	117,244	113,079
Service dependants	67,864	65,129	58,543	54,262	48,653	46,211	40,785
NHS/others	200,458	200,201	192,835	204,283	205,705	210,312	201,319
Overseas	228,985	232,115	241,068	235,654	229,605	212,859	202,756
UK Service personnel	65,468	68,735	73,427	68,019	64,418	59,608	56,530
Service dependants	111,808	111,478	116,162	108,160	102,921	96,463	94,036
Others	51,709	51,902	51,479	59,475	62,266	56,788	52,190

1 As at 31 December of each year.
2 Nocton Hall closed March 1983. Louise Margaret Maternity became a part of the Cambridge Military Hospital, Aldershot in October 1984.
3 The British Station Hospital Falkland Islands is not included until 1983 and ceased operation on 11 August 1987. The British Military Hospital Iserlohn closed in September 1985.
4 The 1982 figures reflect the restriction of non-urgent admission during the Falklands campaign.
5 In addition 24,500 patients were seen at outlying clinics of the hospitals and some 9,800 day patients were treated in the UK and 3,800 overseas in 1987.
6 Provisional.

5.4 Sickness episodes[1] of UK Regular Forces personnel: selected diagnoses

Number

	ICD Codes[2]	1981	1982	1983	1984	1985	1986
Average strength (thousands)		333.8	325.0	322.4	326.3	325.5	322.2
Male		317.1	309.5	306.6	309.8	309.0	305.8
Female		16.7	15.5	15.8	16.5	16.5	16.4
Royal Navy and Royal Marines		74.3	72.2	71.4	71.0	69.6	67.4
British Army		166.8	162.4	160.4	162.4	162.7	161.5
Royal Air Force		92.7	90.4	90.6	92.9	93.3	93.3
All causes	001-999 & V01-V82	53,746	52,535	51,798	52,821	50,208	47,489
Male		49,013	48,232	47,540	48,275	45,830	43,508
Female		4,733	4,303	4,258	4,546	4,378	3,981
Royal Navy and Royal Marines		12,268	10,768	11,329	11,706	10,782	9,065
British Army		25,225	25,207	24,842	26,030	24,324	23,231
Royal Air Force		16,253	16,560	15,627	15,085	15,102	15,193
All diseases	001-799	41,114	39,524	40,114	41,868	39,448	37,380
Infective & parasitic diseases	001-139	3,252	2,963	3,245	3,360	3,148	3,127
Neoplasms	140-239	557	607	656	735	739	653
Endocrine, nutritional & metabolic diseases	240-279	469	407	393	351	288	241
Diseases of blood & blood forming organs	280-289	76	90	89	88	70	72
Mental disorders	290-319	1,313	1,109	1,165	1,025	1,081	1,033
Diseases of the nervous system & sense organs	320-389	1,177	1,117	1,126	1,059	965	1,019
Diseases of the circulatory system	390-459	1,439	1,510	1,655	1,606	1,467	1,393
Diseases of the respiratory system	460-519	10,094	9,624	9,003	10,159	9,166	7,849
Diseases of the digestive system	520-579	8,208	7,840	7,709	7,651	7,278	7,214
Diseases of the genito-urinary system	580-629	2,371	2,401	2,493	2,474	2,287	2,254
Complication of pregnancy, childbirth & puerperium	630-676	270	207	152	149	174	161
Diseases of the skin & subcutaneous tissue	680-709	2,255	2,146	2,059	1,948	1,854	1,733
Diseases of the musculoskeletal system	710-739	6,763	6,974	7,682	8,381	8,251	8,038
Congenital anomalies	740-759	369	266	285	272	224	199
Symptoms & ill-defined conditions	780-799	2,501	2,263	2,402	2,610	2,456	2,404
All injuries[3]	800-999	10,357	10,725	9,585	9,049	8,855	8,619
Aircraft accident injuries		132	121	139	91	120	98
Training & exercise injuries		1,148	934	1,283	1,257	1,346	1,213
Road traffic accident injuries		1,613	1,702	1,340	1,141	1,114	941
Sports injuries		1,965	1,800	1,746	1,693	1,617	1,717
Accidents due to falls or jumps		1,626	1,734	1,745	1,710	1,741	1,570
Other injuries		3,673	4,434	3,332	3,157	2,917	3,080
Supplementary classifications[4]	V01-V82	2,275	2,286	2,099	1,904	1,905	1,490

1 Based upon spells of bedded sickness lasting 2 days or more terminating during the year. Sickness of Army personnel not requiring admission to a medical unit is excluded. Includes all cases whether occurring on or off duty.

2 The ICD code numbers refer to the ninth revision (1977) of the International Statistical Classification of Diseases, Injuries and Causes of Death.

3 Where an injury could be classified under more than one cause (eg aircraft crash during an exercise) then the injury is shown under the first listed cause (ie in the example 'Aircraft accident').

4 Used where no classifiable diagnosis is reported or where the person is not sick, eg admission for investigation, preventive measure or elective surgery.

Cm. 344-II

5.5 Medical discharges of UK Regular Forces personnel [1] [2]

Number

	ICD Codes [3]	1981	1982	1983	1984	1985	1986
All causes	001-999	882	800	794	1,071	1,392	1,342
Male		836	772	761	1,025	1,359	1,290
Female		46	28	33	46	33	52
Royal Navy and Royal Marines		158	142	145	228	246	276
British Army		541	524	511	703	1,014	958
Royal Air Force		183	134	138	140	132	108
All diseases	001-799	738	677	628	840	1,049	1,045
Mental disorders	290-319	125	107	114	106	122	102
Diseases of the nervous system & sense organs	320-389	178	152	160	177	169	147
Diseases of the musculoskeletal system	710-739	195	222	164	313	472	5[illegible]
Other diseases	001-799 nes	240	196	190	244	286	263
All injuries	800-999	144	123	166	231	343	297

1. Medical discharges are those invalided out of the Services before the completion of their engagement.
2. Average strength figures are given in Table 5.4.
3. See note 2 on page 43

5.6 Deaths of UK Regular Forces personnel [1] [2]

Number

	ICD Codes [3]	1982	1983	1984	1985	1986	1987
All causes	001-999	596	349	332	314	295	29
Male		592	345	325	309	292	294
Female		4	4	7	5	3	2
Royal Navy and Royal Marines		161	77	61	56	52	38
British Army		336	167	164	148	151	176
Royal Air Force		99	105	107	110	92	82
All diseases	001-799	119	129	120	112	118	105
Neoplasms	140-239	48	49	54	62	52	46
Heart and Cerebrovascular disease	390-438	56	63	56	44	55	51
Other diseases	001-799 nes	15	17	10	6	11	8
All injuries	800-999	477	220	212	202	177	191
Road traffic accident injuries		115	115	113	113	78	99
Other injuries [4]		362	105	99	89	99	92

1. Includes all deaths whether occurring on or off duty. Latest year figures by cause are provisional.
2. Average strength figures are given in Table 5.4.
3. See note 2 on page 43.
4. The 1982 figure includes UK Service personnel killed in the Falklands Campaign: All services 236; Royal Navy and Royal Marines 113, Army 122, Royal Air Force 1.

5.7 Selected qualifications obtained under Service sponsorship

As a result of training and assistance given by the Services to their personnel, skills valuable in later civilian life are acquired and formal qualifications are often obtained. Not all the degrees are obtained at universities. A number of degree courses are run at the Service education establishments, Royal Naval Engineering College Manadon and Royal Military College of Science Shrivenham.

In Service units and ships, education officers organise instruction for a range of General Certificate of Education and other academic examinations. In addition, Service personnel may attend local education authority and other external courses and will normally be eligible for financial assistance, but these instances are not recorded centrally and are excluded from this table.

Number

	1980	1981	1982	1983	1984	1985	1986
Degrees [1]							
Postgraduate degrees	72	91	90	79	113	122	96
Royal Navy and Royal Marines	14	17	19	22	28	20	18
Army	51	53	48	39	56	76	52
Royal Air Force	7	21	23	18	29	26	26
Medical and dental degrees	101	126	87	90	85	66	73
Royal Navy and Royal Marines	21	23	32	17	22	3	12
Army	58	56	40	47	53	52	50
Royal Air Force	22	47	15	26	10	11	11
Other first degrees	349	365	413	445	434	363	380
Royal Navy and Royal Marines	123	135	142	165	151	111	139
Army	162	179	207	191	199	168	153
Royal Air Force	64	51	64	89	84	84	88
General Certificate of Education [2]							
Advanced level [3]	48	29	23	26	53	46	43
Royal Navy and Royal Marines	26	7	4	7	30	18	19
Army	8	12	11	5	13	17	15
Royal Air Force	14	10	8	14	10	11	9
Ordinary level [4]	2,726	2,837	2,611	2,971	4,116	3,417	3,734
Royal Navy and Royal Marines	1,198	1,091	1,013	1,206	2,318	1,665	1,911
Army	461	506	300	435	374	353	448
Royal Air Force	1,067	1,240	1,298	1,330	1,424	1,399	1,375
City and Guilds of London Institute							
Operator certificates [2]	819	288	258	161	254	429	1,265
Royal Navy and Royal Marines	661	2	8	3	-	-	-
Army	158	286	250	158	234	409	593
Royal Air Force	-	-	-	-	20	20	672
Craft certificates [2]	2,911	7,486	6,524	9,794	9,596	7,866	8,000
Royal Navy and Royal Marines	570	2,194	2,767	3,675	2,849	2,667	2,809
Army	1,607	2,635	2,148	2,412	3,338	2,550	2,911
Royal Air Force	734	2,657	1,609	3,707	3,409	2,649	2,280
Technician certificates [2]	374	283	211	104	718	760	43
Royal Navy and Royal Marines	-	4	-	-	-	-	38
Army	374	279	211	104	138	-	5
Royal Air Force	-	-	-	-	580	760	-
Business Technician Education Council							
Higher certificates/diplomas [2]	60	178	328	658	569	698	668
Royal Navy and Royal Marines	-	-	168	340	278	343	233
Army	7	34	42	101	106	187	250
Royal Air Force	53	144	118	217	185	168	185
Certificates/diplomas [2]	1,575	1,749	2,386	2,350	2,390	2,907	2,650
Royal Navy and Royal Marines	611	480	621	884	639	668	606
Army	139	195	584	463	386	468	716
Royal Air Force	825	1,074	1,181	1,003	1,365	1,771	1,328
Heavy Goods Vehicle driving test passes [5]	16,151	13,964	11,726	11,804	11,689	10,727	12,196
Royal Navy and Royal Marines	131	30	175	295	294	83	321
Army	14,173	12,292	10,129	9,665	10,290	9,200	10,051
Royal Air Force	1,847	1,642	1,422	1,844	1,105	1,444	1,824

1. Includes degrees obtained by serving personnel and University Cadets at Universities and Service educational establishments..
2. Includes only candidates studying for and/or taking examinations directly through their Service.
3. Taken at grade 'E' and above.
4. Taken at grade 'C' and above.
5. All heavy goods vehicle classes combined.

5.8 Service aircraft: accidents involving loss or serious damage, rates and casualties

	1981	1982 [1]	1983	1984	1985	1986	1987
Number of accidents							
All Services	32	45	40	27	24	26	22
Helicopters	10	16	10	6	8	11	9
Fixed wing aircraft	22	29	30	21	16	15	13
Royal Navy	8	14	10	6	6	3	5
Helicopters	7	10	6	3	5	2	4
Fixed wing aircraft	1	4	4	3	1	1	1
Army	1	6	6	2	2	7	3
Helicopters	1	6	3	2	2	7	3
Fixed wing aircraft	-	-	3	-	-	-	-
Royal Air Force	23	25	24	19	16	16	14
Helicopters	2	-	1	1	1	2	2
Fixed wing aircraft	21	25	23	18	15	14	1
Rates per 10,000 flying hours							
Royal Navy	*0.86*	*1.14*	*0.98*	*0.61*	*0.62*	*0.29*	*0.51*
Helicopters	*1.01*	*1.07*	*0.79*	*0.43*	*0.71*	*0.27*	*0.55*
Fixed wing aircraft	*0.42*	*1.36*	*1.56*	*1.10*	*0.37*	*0.35*	*0.35*
Army	*0.11*	*0.63*	*0.62*	*0.20*	*0.19*	*0.68*	*0.30*
Helicopters	*0.12*	*0.68*	*0.33*	*0.21*	*0.23*	*0.83*	*0.36*
Fixed wing aircraft	-	-	*4.08*	-	-	-	-
Royal Air Force	*0.50*	*0.49*	*0.48*	*0.38*	*0.33*	*0.31*	*0.28*
Helicopters	*0.32*	-	*0.14*	*0.13*	*0.13*	*0.25*	*0.27*
Fixed wing aircraft	*0.52*	*0.57*	*0.54*	*0.42*	*0.37*	*0.32*	*0.29*
Casualties to personnel [2]							
Killed	11	35	19	10	17	15	22
Royal Navy	5	4	1	1	7	-	3
Royal Marines	-	1	-	-	-	-	-
Army	-	20	-	3	1	6	3
Royal Air Force	6	7	16	4	9	8	14
Allied and foreign [3]	-	2	1	-	-	1	
Civilians	-	1	1	2	-	-	
Seriously injured	10	17	21	14	12	15	12
Royal Navy	-	2	6	1	3	1	-
Royal Marines	-	-	-	-	-	-	-
Army	-	6	1	1	5	4	3
Royal Air Force	10	8	14	12	4	10	8
Allied and foreign [3]	-	1	-	-	-	-	-
Civilians	-	-	-	-	-	-	1

1. Figures in this column do not include details of aircraft lost to or casualties caused by enemy fire in the Falklands Campaign. Aircraft accidently lost in the Falklands Campaign are included.
2. Service casualties are identified to their serving department and not to the parent service of the aircraft involved.
3. These are officers on exchange from allied and foreign forces.

5.9 Accidents involving loss or serious damage to aircraft of the three Services, 1 January 1987 to 31 December 1987

Date	Aircraft	Parent Service	Service Casualties		Civilian Casualties	
			Killed	Serious Injury	Killed	Serious Injury
1 Feb	Wessex	RAF		1	1	1
24 Feb	Sea King	RN	3			
27 Feb	Chinook	RAF	7			
18 Mar	Lynx	Army	2	2		
19 Mar	Lightning	RAF				
30 Mar	Tornado	RAF		1		
22 Apr	Buccaneer	RAF	2			
3 Jun	Tornado	RAF		2		
17 Jun	Tornado [1]	RAF		1		
17 Jun	Jaguar [1]	RAF	1			
24 Jun	Jaguar	RAF	1			
1 Jul	Lightning	RAF				
16 Jul	Gazelle	Army	1	1		
27 Jul	Tornado	RAF		1		
26 Aug	Phantom	RAF	2			
7 Sep	Phantom	RAF				
23 Sep	Sea King	RN				
15 Oct	Sea Harrier	RN				
16 Oct	Wessex	RN				
23 Oct	Gazelle	Army				
2 Nov	Harrier [1]	RAF	1			
2 Nov	Harrier [1]	RAF	1 [2]			
16 Nov	Hawk [1]	RAF		1		
16 Nov	Hawk [1]	RAF		1		
25 Nov	Gazelle	RN				

Notes:-

1. One accident - Mid air collision
2. USN Pilot

5.10 Strengths of male UK Regular Forces and numbers married[1]: by age

Mid-year

Number

	1981	1982	1983	1984	1985	1986	1987
Male Officers:							
Strengths							
All ages	40,721	40,515	39,910	39,857	40,038	40,335	40,732
17-19	971	763	721	814	834	847	812
20-24	5,709	5,724	5,494	5,440	5,544	5,759	5,815
25-29	5,401	5,613	5,920	6,265	6,491	6,754	7,046
30-34	6,632	5,909	5,365	5,080	5,030	5,084	5,308
35-39	7,076	7,509	7,612	7,475	7,204	6,801	6,067
40-44	5,557	5,536	5,577	5,865	6,289	6,756	7,284
45-49	5,507	5,428	5,198	4,971	4,794	4,530	4,563
50 and over	3,868	4,033	4,023	3,947	3,852	3,804	3,837
Numbers married							
All ages	30,504	30,363	29,734	29,317	29,231	29,030	29,127
17-19	2	2	-	1	-	-	2
20-24	600	607	592	556	510	493	451
25-29	3,191	3,236	3,228	3,305	3,434	3,503	3,607
30-34	5,797	5,133	4,630	4,330	4,260	4,287	4,454
35-39	6,640	7,032	7,105	6,986	6,741	6,346	5,627
40-44	5,318	5,276	5,324	5,597	6,014	6,448	6,959
45-49	5,275	5,220	5,007	4,762	4,586	4,318	4,345
50 and over	3,681	3,857	3,848	3,780	3,686	3,635	3,682
Servicemen:							
Strengths							
All ages	276,929	268,452	266,206	269,740	269,391	265,083	261,749
16-19	64,848	50,565	41,876	41,158	42,500	41,956	40,951
20-24	89,109	91,938	94,717	95,180	90,850	86,277	83,089
25-29	46,254	48,964	53,096	57,528	60,682	61,892	62,607
30-34	34,655	32,573	31,395	30,972	31,307	32,050	33,1
35-39	26,593	28,784	29,608	29,658	29,044	28,179	26,190
40-44	10,006	9,959	9,808	9,559	9,515	9,379	10,441
45-49	3,482	3,584	3,641	3,685	3,471	3,387	3,337
50 and over	1,982	2,085	2,065	2,000	2,022	1,963	1,988
Numbers married							
All ages	137,589	140,668	142,644	143,222	142,269	139,615	137,140
16-19	1,677	1,497	1,009	664	550	558	571
20-24	30,384	31,519	31,803	30,828	28,829	26,088	23,580
25-29	35,107	37,059	39,595	42,243	44,032	44,800	44,948
30-34	31,139	29,194	28,123	27,635	27,857	28,278	29,088
35-39	24,720	26,757	27,560	27,563	26,910	26,081	24,179
40-44	9,421	9,323	9,179	8,935	8,920	8,791	9,778
45-49	3,281	3,373	3,435	3,474	3,277	3,178	3,134
50 and over	1,860	1,946	1,940	1,880	1,894	1,841	1,862

1. Widowed and divorced personnel are excluded from the numbers married, except those in the Royal Navy, the Royal Marines and the Army with dependent children.

5.11 Strengths of male UK Regular Forces and numbers married [1] : by rank [2]

Mid-year

Number

	1981	1982	1983	1984	1985	1986	1987
Male Officers							
Strengths							
All ranks	40,721	40,515	39,910	39,857	40,038	40,335	40,732
Major General and above	216	221	218	216	207	202	209
Brigadier	387	391	382	375	382	384	386
Colonel	1,485	1,484	1,476	1,437	1,429	1,427	1,433
Lieutenant Colonel	4,654	4,590	4,479	4,407	4,375	4,434	4,502
Major	11,860	11,837	11,659	11,546	11,467	11,325	11,291
Captain	14,125	14,262	14,088	14,076	14,085	14,115	14,175
Lieutenant and below	7,994	7,730	7,608	7,800	8,093	8,448	8,736
Numbers married							
All ranks	30,504	30,363	29,734	29,317	29,231	29,030	29,127
Major General and above	204	209	211	208	204	199	205
Brigadier	376	383	373	365	373	372	370
Colonel	1,394	1,415	1,398	1,378	1,379	1,380	1,388
Lieutenant Colonel	4,388	4,374	4,250	4,219	4,210	4,236	4,309
Major	11,067	11,076	10,913	10,739	10,645	10,479	10,430
Captain	11,212	11,152	10,793	10,614	10,579	10,575	10,556
Lieutenant and below	1,863	1,754	1,796	1,794	1,841	1,789	1,869
Servicemen:							
Strengths							
All ranks	276,929	268,452	266,206	269,740	269,391	265,083	261,749
Warrant Officer	11,557	11,565	11,441	11,485	11,397	11,387	11,337
Staff Sergeant	23,160	23,076	23,174	23,454	23,254	22,880	22,586
Sergeant	35,066	35,403	35,148	34,779	34,640	34,362	34,122
Corporal	50,484	51,439	51,842	52,156	53,131	53,062	53,738
Lance Corporal	22,757	23,211	23,078	22,824	22,972	23,150	22,900
Private (including juniors)	133,905	123,758	121,523	125,042	123,997	120,242	117,066
Numbers married							
All ranks	137,589	140,668	142,644	143,222	142,269	139,615	137,140
Warrant Officer	11,163	11,177	11,055	11,096	11,003	10,999	10,931
Staff Sergeant	21,488	21,346	21,468	21,660	21,369	20,953	20,668
Sergeant	30,797	30,998	30,753	30,320	30,100	29,669	29,301
Corporal	36,397	37,314	37,434	37,671	38,237	38,204	38,575
Lance Corporal	12,358	13,178	13,500	13,540	13,475	13,384	12,881
Private (including juniors)	25,386	26,655	28,434	28,935	28,085	26,406	24,784

1. Widowed and divorced personnel are excluded from the numbers married, except those in the Royal Navy, the Royal Marines and the Army with dependent children.

2. In Army terms.

5.12 Land and foreshore holdings: location[1]

1 April

Thousand hectares

	1981	1982	1983	1984	1985	1986	1987
United Kingdom							
Land: Freehold	220.1	217.8	215.9	215.0	211.1	210.9	210.3
Leasehold	11.9	11.9	11.9	11.6	11.4	10.9	10.9
Foreshore: Freehold:	13.2	13.2	13.1	13.1	13.1	13.1	13.1
Leasehold	4.9	4.9	4.9	4.9	4.9	4.9	5.0
Rights [2]	36.7	36.7	36.7	36.0	36.0	36.2	36.2
England							
Land: Freehold	179.6	177.7	175.9	174.9	172.7	172.2	171.5
Leasehold	8.0	8.0	8.0	7.7	7.6	7.6	7.6
Foreshore: Freehold	10.4	10.4	10.4	10.4	10.4	10.4	10.4
Leasehold	4.6	4.6	4.6	4.6	4.6	4.6	4.7
Rights [2]	27.1	27.1	27.1	26.4	26.5	26.3	26.3
Wales							
Land: Freehold	20.2	19.9	19.9	19.9	19.4	19.7	19.7
Leasehold	0.7	0.7	0.6	0.6	0.6	0.1	0.1
Foreshore: Freehold	1.1	1.1	1.1	1.0	1.0	1.0	1.0
Leasehold	-	-	-	-	-	-	-
Rights [2]	1.2	1.2	1.2	1.2	1.1	1.5	1.5
Scotland							
Land: Freehold	17.9	17.9	17.8	17.8	16.7	16.7	16.8
Leasehold	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Foreshore: Freehold	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Leasehold	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Rights [2]	8.4	8.4	8.3	8.3	8.3	8.3	8.3
Northern Ireland							
Land: Freehold	2.3	2.3	2.3	2.4	2.3	2.3	2.3
Leasehold	1.0	0.8	0.8	0.8	0.7	0.7	0.7
Foreshore: Freehold	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Leasehold	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Rights [2]	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Defence land used for agricultural purposes (freehold and leasehold)							
Used for grazing only	59.8	58.8	58.8	58.8	58.6	58.1	57.6
Full agricultural use	52.0	50.3	50.9	51.2	50.5	49.5	47.9
Total	111.9	109.1	109.7	110.0	109.1	107.6	105.5
England	86.9	84.8	85.8	85.0	84.2	84.0	82.7
Wales	15.2	14.8	15.0	15.0	14.8	14.8	14.9
Scotland	8.8	8.5	8.3	9.3	9.5	8.3	7.4
Northern Ireland	1.1	1.1	0.6	0.6	0.6	0.5	0.5

1. Comprises land and foreshore owned by the Ministry of Defence and land and foreshore over which it has limited rights under grants or licences. It also includes land declared as surplus to Defence requirements. During the year to 1 April 1987, the size of the Defence Estate was reduced by 544 hectares. At that date, 1685 hectares were awaiting disposal by the Property Services Agency. MOD office buildings which are held by the Department of the Environment as part of the Civil Estate, are excluded.

2. About 90% of this land is held under licences.

5.13 Land and foreshore[1] holdings: type of use

1 April

Thousand hectares

	1981	1982	1983	1984	1985	1986	1987
Freehold	233.3	231.0	229.0	228.1	224.2	224.0	223.4
Royal Navy	11.9	11.8	11.7	11.6	11.5	11.4	11.2
Airfields etc	1.5	1.5	1.5	1.4	1.3	1.2	1.2
Naval bases	1.1	1.1	1.0	1.0	1.0	1.0	0.9
Training areas and ranges	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Barracks and camps	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Storage and supply depots	3.6	3.5	3.4	3.4	3.4	3.4	3.4
Radio and W/T stations	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Miscellaneous	1.3	1.3	1.3	1.3	1.3	1.3	1.2
Army	149.5	149.0	149.0	148.0	147.4	147.3	147.5
Airfields etc	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Training areas and ranges	133.8	133.6	133.7	133.4	133.2	133.4	133.5
Barracks and camps	9.2	9.0	8.9	8.8	8.7	8.5	8.7
Storage and supply depots	4.8	4.7	4.5	4.3	4.1	4.0	3.9
Radio and W/T stations	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Miscellaneous	0.9	0.9	0.8	0.8	0.7	0.7	0.7
Royal Air Force	39.6	39.0	38.1	38.0	38.1	38.3	37.9
Airfields etc	27.0	26.6	26.1	25.9	25.9	25.9	25.6
Training areas and ranges	3.6	3.6	3.6	3.7	3.8	4.2	4.3
Barracks and camps	1.1	1.0	0.9	0.9	0.9	0.8	0.8
Storage and supply depots	2.9	2.8	2.8	2.8	2.8	2.8	2.7
Radio and W/T stations	4.2	4.1	4.0	4.0	4.0	4.0	3.9
Miscellaneous	0.8	0.8	0.8	0.7	0.7	0.6	0.6
Procurement Executive establishments	32.3	31.3	31.0	30.5	27.2	27.0	26.8
Leasehold	16.8	16.8	16.8	16.5	16.4	15.8	15.9
Royal Navy	2.6	3.2	3.2	2.6	2.6	2.6	2.6
Airfields etc	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Training areas and ranges	2.3	2.9	2.9	2.3	2.3	2.3	2.3
Miscellaneous	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Army	4.6	4.0	4.0	4.6	4.3	4.2	4.2
Training areas and ranges	4.2	3.7	3.7	4.2	3.9	3.8	3.8
Barracks and camps	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Miscellaneous	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Royal Air Force	8.4	8.4	8.4	8.1	8.4	7.9	7.9
Training areas and ranges	7.8	7.9	7.8	7.8	7.9	7.4	7.4
Storage and supply depots	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Radio and W/T stations	0.4	0.4	0.4	0.2	0.4	0.4	0.4
Procurement Executive establishments	1.2	1.2	1.2	1.2	1.1	1.1	1.2
Rights held[2]	36.7	36.7	36.7	36.0	36.0	36.2	36.2
Royal Navy	13.7	13.8	13.7	13.7	14.0	14.0	14.0
Training areas and ranges	13.3	13.3	13.5	13.4	13.6	13.6	13.6
Barracks and camps	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Radio and W/T stations	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Miscellaneous	0.1	0.1	0.1	-	0.1	0.1	0.1
Army	13.7	13.5	13.5	12.9	12.8	13.2	13.3
Training areas and ranges	13.0	12.8	12.9	12.3	12.2	12.6	12.7
Barracks and camps	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Miscellaneous	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Royal Air Force	8.2	8.2	8.2	8.1	8.0	8.0	8.0
Airfields etc	0.9	0.9	0.9	0.9	1.0	1.0	1.0
Training areas and ranges	6.9	6.9	6.9	6.8	6.6	6.5	6.5
Radio and W/T stations	0.3	0.3	0.3	0.3	0.2	0.3	0.3
Miscellaneous	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Procurement Executive establishments	1.2	1.1	1.2	1.3	1.2	1.0	0.9

1. The overall split between land and foreshore is given in table 5.12.
2. About 90% of this land is held under licences.

5.14 Service entertainment and welfare

	1981	1982	1983	1984	1985	1986	1987
	Number						
Services Sound and Vision Corporation (SSVC) [1]							
Cinemas	59	55	36	25	21	19	20
United Kingdom	10	9	5	5	4	2	2
Overseas	49	46	31	20	17	17	18
of which: Federal Republic of Germany	39	37	22	10	10	10	10
Combined Services Entertainment							
Production of stage and cabaret shows (for Northern Ireland and overseas)	51	57	54	50	48	47	37
Trading outlets	78	78	79	81	77	70	70
Video libraries	-	40	40	70	76	88	86
of which: Federal Republic of Germany	-	25	25	36	36	38	35
NAAFI [2] trading outlets	1,112	1,122	1,087	1,060	1,067	1,041	1,043
United Kingdom	682	690	682	675	685	666	671
BAOR/RAFG	260	256	253	243	244	237	238
Elsewhere including HM ships	170	176	152	142	138	138	134
	Thousands						
Circulation of Service journals [3]							
Navy News (monthly)	86	91	97	102	103	104	102
Soldier Magazine (fortnightly)	32	30	30	29	30	27	26
RAF News (fortnightly)	34	33	34	33	31	32	32

1. The Services Sound and Vision Corporation (SSVC) is a registered charity and a private company limited by guarantee with its head office at Chalfont Grove, Gerrards Cross, Bucks. It incorporates the former Services Kinema Corporation (SKC) and the British Forces Broadcasting Service (BFBS). Its Memorandum of Association defines the charitable objects for which the Corporation is established and Articles of Association define the manner in which it is governed. MOD funded activities include radio and television broadcasting, live entertainment, the production and distribution of training films and the supply and maintenance of audio visual training equipment.

2. NAAFI is a registered company limited by guarantee. A Memorandum of Association defines its powers and objects while Articles of Association govern the way in which the NAAFI Council and the Board of Management are appointed and work. Its trading outlets comprise shops and messing issue stores, Junior Ranks clubs and ships canteens. Figures for petrol stations, sub-post offices, bowling alleys and shops attached to Junior Ranks clubs are included but shops and stores opened for military exercises or temporary training camps are excluded.

3. The figures quoted give the average per issue for each year.

5.15 SSVC[1] Broadcasting Division (BFBS)

		1981	1982	1983	1984	1985	1986	1987
		Hours/week						
SSVC TV	Live/recorded[2]	60	60	61	60	63	68	74
	Recorded[3]	-	-	-	-	28	30	31
	Cassette[4]	21	21	21	21	21	21	21
BFBS Radio London:[5]	Total[6]	Previously		30	41	53	80	96
	Produced locally recorded	BFBS Radio		27	38	42	42	70
	BBC material (satellite/live link)	within MOD		*	*	*	27	11
Cologne:	Total[7]	168	168	168	182	188	189	193
	Produced locally	76	76	78	92	93	97	89
Cyprus	Total[8]	183	183	168	194	233	252	227
	Produced locally	94	94	113	113	109	135	87
Gibraltar	Total (2 Channels)	177	177	212	213	216	246	262
	Produced locally	102	102	132	119	120	127	139
Hong Kong: English:	Total	80	99	99	135	126	168	168
	Produced locally	39	42	44	45	59	72	63
Nepali:	Total	72	76	76	76	96	76	77
	Produced locally	64	72	73	72	87	74	74
Nepal:	Total	-	-	21	44	46	110	110
	Nepali output	-	-	-	-	-	16	16
	Produced locally	-	-	18	26	28	6	6
Brunei:	Total	-	-	71	72	72	134	132
	Produced locally	-	-	20	14	14	64	59
Belize:	Total	-	-	-	-	137	168	168
	Produced locally	-	-	-	-	70	78	82
Falkland Islands:[9]								
	Total	-	-	-	-	-	121	168
	Produced locally	-	-	-	-	27	34	30
		Thousands						
Estimated target audiences[10]								
	SSVC TV (Germany/Cyprus/Falklands)	154	156	160	165	175	180	180
	Cassette	*	*	8	15	20	20	20
	BFBS radio	200	200	202	208	218	220	220

1. See Note 1 on page 52
2. Drawn proportionately from ITV and BBC channels to provide a service in the Federal Republic of Germany.
3. As in (2) to provide a service in the Cyprus Sovereign Base areas, and at Mount Pleasant, Falkland Islands, from 4 Dec 1986.
4. Drawn from (2) to serve British Forces personnel in Belize, Sardinia, the Falkland Islands, Nepal, Brunei, Sinai and HM Ships.
5. BFBS London is a production centre supplying programme material on tapes or by satellite to BFBS Radio Station worldwide. Material on casettes is also despatched daily to HM Ships at sea and small specialist service units serving in remote areas.
6. Including syndicated material from stations.
7. Main Station, Berlin, Rheindahlen, Bielefeld and Osnabrück News Studio.
8. Dhekelia Main Station (2 channels) and Episkopi.
9. The BFBS station in the Falkland Islands operates in support of the Falkland Islands Broadcasting Station which is managed by the Falkland Islands government. By agreement between the Military and Civil Commissioners the responsibility for broadcasting hours is divided between BFBS and FIBS although some London-produced BFBS programmes are used to supplement other sources of material during hours for which FIBS is nominally responsible.
10. Comprising UK based civilians, Service personnel and their dependents.

5.16 Service pensioners [1]

1 April — Thousands

	1981	1982	1983	1984	1985	1986	1987
All pensioners	220.4	219.9	220.3	221.9	222.9	224.7	225.9
Male	218.2	217.7	218.0	219.6	220.5	222.3	223.5
Female	2.2	2.2	2.3	2.4	2.4	2.4	2.5
Officers	59.1	59.0	59.1	59.6	59.8	60.0	60.0
Male	57.9	57.8	57.9	58.4	58.5	58.8	58.8
Female	1.2	1.2	1.2	1.3	1.3	1.3	1.3
Others	161.3	160.9	161.2	162.3	163.2	164.7	165.9
Male	160.3	159.9	160.1	161.2	162.0	163.5	164.7
Female	1.0	1.0	1.1	1.1	1.1	1.2	1.2
Age of pensioner							
under 40	7.2	6.8	6.6	6.7	6.6	7.1	7.1
40–49	46.5	45.8	45.4	45.7	46.0	46.1	46.6
50–59	59.1	58.1	58.4	59.4	60.7	62.9	64.1
60–69	60.7	61.2	60.5	59.5	57.5	55.8	54.9
70–79	36.5	37.0	38.0	38.8	39.8	39.6	39.6
80 and over	10.3	11.0	11.4	11.8	12.3	13.1	13.7
Pension commenced [2]							
pre 1945	13.8	12.4	11.0	9.8	8.7	7.6	6.7
1945–1955	34.3	31.9	29.5	27.2	25.2	23.0	21.0
1956–1961	35.3	34.2	33.1	31.9	30.9	29.5	28.2
1962–1969	51.1	50.1	49.3	48.2	46.8	45.9	44.7
1970–1974	37.8	37.6	37.2	36.8	36.4	35.9	35.4
1975–1979	42.3	42.1	41.9	41.7	41.4	41.2	41.0
1980–1984	5.7	11.5	18.3	26.4	33.5	33.6	33.4
1985	*	*	*	*	*	8.1	8.0
1986	*	*	*	*	*	*	7.6

1. Comprises recipients of Service retired pay (officers) and pensions (servicemen/servicewomen) and invaliding an attributable retired pay and pensions but not purely disability pensions.

2. Financial years beginning 1 April, except 1945 when the effective date was 19 December.

5.17 Service married accommodation

Details are given of the accommodation provided for Service families in the United Kingdom and abroad partly by building to approved standards and partly by renting accommodation. The multiple hirings in British Army of the Rhine (BAOR) and Royal Air Force Germany (RAFG) relate to accommodation built by private developers and leased by the Federal German authorities on behalf of the British Forces. Small numbers of multiple hirings are held elsewhere and are included in the 'hirings' figures.

January

Thousands

	1982	1983	1984	1985	1986	1987 [1]	1988 [1]
United Kingdom	87.5	87.0	85.9	85.3	84.3	82.5	81.0
Permanent holdings	87.2	86.6	85.7	85.0	84.0	82.4	80.9
Furnished hirings	0.3	0.3	0.3	0.2	0.3	0.1	0.1
Royal Navy:							
Permanent holdings	15.1	14.9	14.8	14.6	14.5	14.1	13.7
Furnished hirings	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Army:							
Permanent holdings [2]	41.6	41.5	41.0	40.7	40.2	39.4	38.9
Furnished hirings	0.1	0.1	0.1	0.1	0.1	-	-
Royal Air Force:							
Permanent holdings	30.5	30.2	29.9	29.7	29.3	28.9	28.3
Furnished hirings	0.1	0.1	0.1	0.1	0.1	-	-
Vacancies summary (United Kingdom only)							
Total vacant	13.6	14.2	14.3	14.2	14.0	15.0	15.8
Vacancies as a percentage of holdings	*15.6*	*16.4*	*16.8*	*16.7*	*16.7*	*18.2*	*19.5*
Overseas	46.0	46.0	46.0	47.6	50.3	50.6	47.1
Permanent holdings	21.4	21.4	21.4	21.5	21.6	21.5	21.1
Hirings	24.5	24.6	24.6	26.1	28.7	29.1	26.0
Royal Navy:							
Permanent holdings	0.6	0.6	0.6	0.7	0.7	0.6	0.5
Army:							
Permanent holdings [3]	16.4	16.4	16.4	16.3	16.3	16.3	16.0
Multiple hirings in BAOR [3]	17.3	17.4	17.4	17.7	20.1	20.5	19.0
Other hirings [3]	1.7	1.6	1.6	2.1	2.1	2.1	0.4
Royal Air Force:							
Permanent holdings	4.4	4.4	4.4	4.5	4.6	4.6	4.6
Unfurnished hirings in RAF Germany [4]	4.6	4.6	4.7	5.4	5.5	5.5	5.6
Other hirings	0.3	0.4	0.3	0.3	0.4	0.4	0.4
Tri-service hirings	0.6	0.6	0.6	0.6	0.6	0.6	0.6

1. Due to a change in reporting dates, figures since 1987 are taken as at November in the previous year.
2. Including a small number of unfurnished hirings taken on from local authorities and the Scottish Special Housing Association, which are not recorded separately.
3. Figures for 1988 are provisional.
4. Includes multiple hirings.

6.1 Armed Forces and security in Northern Ireland

This shows annual figures of the Regular Forces in Northern Ireland in terms of major units of the combat arms, eg battalion or regiment, the size of which may vary according to the primary role.

Number

	1982	1983	1984	1985	1986	1987	1988 [2]
Regular Army [1]							
Force level at 1 April:							
Major units of the combat arms [3]	9	8	8	8	10	10	10
Resident units	6	6	6	6	6	6	6
Roulement units	3	2	2	2	2	2	2
Incremental reinforcement battalions	-	-	-	-	2	2	2
Total units which served in the province during the year	22	18	15	18	23	25	..
Ulster Defence Regiment at 1 April							
Full time	2,739	2,793	2,683	2,717	2,795	2,788	2,858
Males	2,561	2,601	2,483	2,522	2,594	2,573	2,633
Females	178	192	200	195	201	215	225
Part time	4,391	4,342	4,094	3,732	3,767	3,718	3,506
Males	3,893	3,798	3,563	3,224	3,220	3,183	2,997
Females	498	544	531	508	547	535	509
Deaths							
Service personnel	28	15	19	6	12	11	..
of which serving in the Ulster Defence Regiment	7	10	10	4	8	8	..
Security							
Bombs neutralised	113	101	55	67	82	148	..
Weight of explosives (Kgs):							
Neutralised	3,311	3,403	2,774	3,500	4,292	4,001	..
In explosions (estimated)	5,080	3,140	3,875	5,312	5,130	2,616	..
Finds:							
Explosives (Kgs)	2,297	1,707	3,871	3,345	2,443	5,885	..
Firearms	317	201	197	238	215	267	..
Ammunition	41,452	32,451	27,211	13,748	29,061	19,796	..
Persons charged with serious security-type offences	686	613	528	522	655	468	..

1. Includes Royal Marine commandos in the infantry role.
2. Figures for the current year are as at 1 January.
3. Excludes temporary deployments.

6.2 Search and rescue operations at home

This covers incidents in which Rescue Co-ordinating Centres (RCCs) in the United Kingdom co-ordinated search and rescue (SAR) actions in which elements of the Armed Forces were involved. It also includes urgent medical incidents in which the Forces SAR facilities gave assistance (eg inter-hospital transfers).

Number

	1981	1982	1983	1984	1985	1986	1987
Incidents [1]	1,097	1,111	1,146	1,145	1,129	1,188	1,361
Royal Navy	280	254	299	237	250	248	315
Army	3	3	6	1	-	-	-
Royal Air Force	850	893	864	915	890	950	1,069
Call outs [2]	1,285	1,291	1,350	1,331	1,314	1,398	1,633
of Royal Navy helicopters	324	285	324	265	272	259	345
of Army helicopters [3]	3	3	7	1	-	-	-
of Royal Air Force helicopters	841	876	893	945	943	992	1,130
of Royal Air Force Nimrod aircraft	56	55	70	56	62	68	71
of other fixed wing aircraft [3]	2	4	3	-	-	6	9
of Royal Air Force Marine craft [3,4]	6	8	7	8	1	-	-
of HM Ships & Auxiliary Vessels [3]	10	2	-	-	3	-	-
of Royal Air Force Mountain rescue teams	43	58	46	56	33	73	78
Persons rescued [5]	864	898	969	1,061	883	811	926
Civilian	799	832	880	1,004	826	747	856
Military	65	66	89	57	57	64	70
by Royal Navy helicopters	236	127	235	190	195	159	173
by Army helicopters	1	-	2	-	-	-	-
by Royal Air Force helicopters	603	707	711	838	674	638	736
by Royal Air Force Marine craft	-	1	3	2	-	-	-
by HM Ships & Auxiliary Vessels	5	-	-	-	-	-	-
by Royal Air Force Mountain rescue teams	19	63	18	31	14	14	17

1. Since more than one arm of the Services may be involved in some incidents, the total may not be the sum of the incidents attended by the Services separately.
2. More than one element of the Search and Rescue services may be called out to a reported incident.
3. Not on permanent standby.
4. The RAF marine craft unit was disbanded during 1986.
5. Figures for persons rescued relate only to those who were actually removed (alive) from a hazard or who were transported for urgent medical attention.

6.3 Military aid to civil ministries during industrial disputes: involvement of Service personnel

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Disputes requiring involvement of Service personnel: [1]	*Ambulance drivers*	*Ambulance drivers Railway workers Water workers*	*Fire Service*	-	-	*Prison officers Fire Service*	*Fire Service*
Deployment							
Period (weeks)	-	1	-	-	-	19	0.8
Number of personnel	18	305	-	-	-	275	322
Total estimated effort (man weeks)	3	305	-	-	-	389	256
Standby [2]:							
Total estimated effort (man weeks)	54,000	59,000	23,000	-	-	1560	256

1. Details for the latest year are provisional.
2. Covers Service personnel at 72 or less hours notice to deploy.

6.4 Expenditure on offshore tasks included in the Defence budget [1]

£ million

	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
Total expenditure on offshore tasks	42.94	45.99	44.75	46.41	48.20	40.51	31.23
Offshore protection [2]	27.04	32.12	32.17	33.98	30.23	25.02	18.13
RN Fishery Protection Squadron [3]							
Offshore [4]	8.30	20.53	20.76	19.50	24.70	24.3	17.64
Coastal	9.30						
RAF Nimrod aircraft [5]	8.99	11.21	10.87	13.83	4.80	-	
Headquarters of Captain Fishery Protection	0.45	0.38	0.54	0.65	0.73	0.72	0.49
Hydrographic surveys of home waters [6]	15.90	13.87	12.58	12.43	17.97	15.49	13.10

1. The figures given in this table are based on the original *Supply Estimates* and reflect the price levels of the Estimates for the years in question.
2. Includes protection of fisheries and oil and gas installations.
3. There is no longer a division between the offshore and coastal responsibility of the RN Fishery Protection Squadron.
4. Certain of these costs are recovered from the fisheries departments and the Department of Energy.
5. Certain of these costs are recovered from the fisheries departments, and up to 1985-86, from the Department of Energy. During 1985-86 aerial surveillance of offshore energy installations ceased and in 1986/87 aerial patrols of fishing areas ceased.
6. Department of Transport contributed towards these costs.

6.5 Fishery protection[1]

Number

	1981	1982	1983	1984	1985	1986	1987
Vessels boarded	1,548	1,869	2,102	1,858	1,687	1,458	1,488
In sea areas[2]							
IV North Sea	770	1,087	1,223	882	762	793	531
Vb Faroes V1 West of Scotland/Rockall	21	10	10	3	5	-	-
VII Irish Sea/Celtic Sea/Bristol Channel/ Western Approaches/English Channel	757	772	869	973	920	665	957
Convictions arising from RN boardings[3]	43	27	18	19	29	39	41
Belgium	3	2	-	1	1	4	9
Denmark	6	2	9	2	6	6	3
Eire	2	2	-	-	-	-	2
France	7	1	2	1	2	7	2
Holland	4	1	-	1	2	6	6
Norway	1	-	-	-	-	-	-
Spain	7	6	-	6	9	8	9
United Kingdom	13	13	7	8	8	8	10
West Germany	-	-	-	-	1	-	-

Source: Ministry of Agriculture, Fisheries and Food

1. This table relates to activities of the RN Fishery Protection Squadron operating within the total UK fishing limits. Boardings carried out by vessels of the Department of Agriculture and Fisheries for Scotland are not included.
2. Sea areas as defined by the International Council for the Exploration of the Sea.
3. Comprises convictions obtained from prosecutions initiated by all United Kingdom Fisheries Departments.

6.6 Meteorological Office

	Outturn[1]					Estimates	
	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
	£ million[2]						
Finance							
Expenditure[3]	51.06	59.96	63.13	66.43	73.16	70.63	72.95
Receipts	17.01	18.93	20.92	21.76	23.61	22.86	25.44
Net Expenditure	34.05	41.03	42.21	44.67	49.55	47.77	47.51

1. These figures combine actual expenditure, where known, and the original Estimates where Meteorological Office expenditure cannot be distinguished from that of other establishments. Common support services expenditure is excluded.
2. Outturn and estimates are given at outturn and estimates prices respectively.
3. Works expenditure is included.

6.7 Hydrographic services

	1981	1982	1983	1984	1985	1986	1987
	Number						
Surveying vessels							
Ocean	4	4	4	4	4	3	3
Coastal	4	4	4	4	4	5	5
Inshore	3	3	4	4	-	-	-
Survey Launch	-	-	-	-	1	1	1
Charts and publications produced							
New charts	143	163	226	198	152	118	144
Navigational	89	127	157	144	101	89	110
Lattice	35	32	65	32	41	9	8
Miscellaneous	19	4	4	22	10	20	
New editions of charts	300	372	277	280	266	274	293
Navigational	220	281	211	214	206	214	254
Lattice	70	76	55	53	46	51	21
Miscellaneous	10	15	11	13	14	9	18
Small corrections to charts	5,632	5,883	6,392	6,842	6,633	7,273	7,207
Notices to Mariners	3,491	3,734	3,998	4,108	4,003	4,409	4,483
Block corrections to charts	171	305	246	232	266	163	201
Radio Navigational Warnings	860	929	1,075	1,314	1,862	2,078	2,021
Revised volumes:							
Sailing Directions (a series of 75 books)	4	4	5	6	1	3	2
Lights list (a series of 12 books)	9	8	8	8	7	9	8
Admiralty list of radio signals (6 volumes)	6	6	6	6	5	5	6
Tide tables (3 volumes)	3	3	3	3	3	3	3
Supplements to Sailing Directions	46	49	35	27	31	26	38
	Thousands						
Sales and issues							
Charts printed	3,587	3,546	2,769	3,185	2,761	2,468	2,526
Charts sold	2,845	2,686	2,334	2,354	2,221	1,983	1,811
Charts issued to government departments	511	636	549	528	499	499	510
Books sold	613	571	502	524	504	474	432

National estimates

Since the creation of the Ministry of Defence in 1964, statisticians have been estimating the number of jobs in UK industry that depend upon MOD expenditure or defence exports. The results have been of interest to Ministers and Parliament, to the press, and to defence economists. To begin with these employment estimates were based on answers to a question about defence work in the Department of Employment's monthly survey of employment in manufacturing industry. But a poor response rate, and doubts about accuracy of the replies led to the dropping of this question in 1973.

In the late 1970s, more conscious of the burden that government forms placed upon industry, MOD statisticians devised a method of estimating defence employment using existing data, either collected in regular Government Statistical Service inquiries, or in the MOD accounting system. This method was described in detail in 'Employment and Defence' (1) and is still at the heart of today's estimation procedure. One of its drawbacks, though, was that estimates could only be produced for employment in the United Kingdom as a whole.

The 1980s have seen a new demand for regional economic data, and a particular issue among defence economists has been the effect of defence spending on regional and local economies. In 1986, MOD statisticians decided to investigate the possibility of producing regional estimates of defence spending and defence employment. This article outlines the new method and presents the first estimates, which are for 1985/86.

Direct and indirect employment

The method devised to produce national estimates requires the combination of two elements. First, a breakdown of MOD expenditure with UK industry by industrial sector (using the Standard Industrial Classification (SIC)); and, second, a measure of sales per employee for each of the industries where defence spending is significantly large. Dividing the first by the second gives an estimate of those employed directly on defence contracts.

Of course work is also generated for subcontractors and others who supply the main contractors. This indirect employment is estimated using the industry by industry input-output table, produced by the Central Statistical Office (2), which shows the extent to which the output of each industry depends on inputs from supplying industries. This matrix is used to trace the production chain back to raw materials or imports, and the indirect employment over the whole chain is estimated by using figures of sales per employee at each stage.

Another sort of indirect employment, that generated by the additional consumer spending which arises from the defence jobs, is not included in the estimates.

Breakdown by type of expenditure

The approach described above is used to produce three different employment estimates: one for equipment spending, one for non-equipment spending, and one for UK industry's exports of defence equipment. Data sources for the two elements required, expenditure and sales per employee, differ in each case. For equipment spending, the industrial breakdown of expenditure is principally derived from information held on the MOD bill-paying computer at Liverpool, on which every contract paid is coded for industry (using a 3-digit SIC). Bills not paid through Liverpool (about a quarter of total equipment spending) are assigned industry codes in the same proportions as those used for similar types of Liverpool spending.

Data on non-equipment spending (largely fuel, food and clothing) are extracted from the MOD accounting system. Industries are assigned using whatever information can be obtained on spending patterns. This is inevitably less accurate than for equipment spending. Together, these two expenditure analyses make up Table 2.5 of this volume.

Estimates of defence exports are derived from a combination of HM Customs and Excise tariff headings that can reasonably be allocated wholly to defence, and from estimates produced by the Society of British Aerospace Companies (see Table 2.7). Many defence exports are perforce excluded. Exports of some equipment which has both a civil and defence use cannot be identified; nor can some non-equipment projects such as military construction.It follows that the estimates both of defence exports and of associated employment almost certainly fall short of the true total.

As might be expected, a few industries dominate the defence equipment and exports markets -ordnance and small arms, electronics, shipbuilding, aerospace, mechanical and electrical engineering, other vehicles and instrument engineering cover over 90% of identifiable sales. The Business Statistics Office (BSO) provides sales and employment statistics for some of these industries, from which ratios of sales per employee are calculated. Similar ratios for other industries are calculated from statistics published in the Monthly Digest of Statistics, Employment Gazette and company annual reports.

Applying the ratios obtained to the corresponding figures for defence expenditure or export sales yields the estimates shown in Table 6.8.

6.8 UK Employment dependent on Defence expenditure

thousands

	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
Equipment Expenditure								
direct	220	220	230	240	225	215	225	200
indirect	180	180	190	190	180	160	170	160
Non-equipment expenditure								
direct	100	100	100	80	90	85	85	85
indirect	80	80	80	70	70	70	70	70
Total MOD expenditure								
direct	320	320	330	320	315	300	310	285
indirect	260	260	270	260	250	230	240	230
Exports								
direct	70	65	75	75	75	70	65	60
indirect	60	55	65	65	65	60	55	50
Totals								
direct	390	385	405	395	390	370	375	345
indirect	320	315	335	325	315	290	295	280
all	710	700	740	720	705	660	670	625

Estimates of Direct Employment for 1985-86

In 1986 Ministers approved a short study to decide if there was a cost effective way to produce regional estimates of defence employment. One option considered was to split the national employment estimates pro rata to the existing estimates of regional defence spending. However, the different regional spreads of the defence industries and their disparate labour productivity made this a very unattractive solution.

It was decided instead to use existing location codes on MOD's Liverpool computer in order to treat the largest elements of expenditure in a particular location individually. The goal was to identify 75 per cent of the information for each region and industry in this way in order to provide a sound basis for regional estimates of employment derived on similar lines to the national estimates. Much of the 'non-Liverpool' expenditure could be allocated to industry and region on the basis of accounting information, though with less accuracy overall.

The resultant analysis of MOD expenditure on equipment by region and industry would be combined wherever possible with the most appropriate regional data on sales per employee to give estimates of direct employment. In effect, the proposal was for a refinement of the national method, with a more careful analysis of the accounting data providing the key. Because no regional information was available for non-equipment spending or for exports, no regional employment estimates would be attempted for these two categories.

Following Ministerial approval, figures for 1985/86 were produced, using the national results already available as benchmarks. Happily, the two differed by only 2%, but practical difficulties were encountered. Use of the extremely detailed MOD location codes stretched resources and the goal of verifying 75 per cent of the 'Liverpool expenditure' was not always reached, most notably for the South East. Similarly, the full range of information on ledger headings (codes for the vote subdivisions against which payments are booked) could not be used: this made industrial analysis of the non-Liverpool data more difficult.

References
1. Chris Pite, "Employment and Defence", Statistical News No 51 (HMSO, November 1980)
2. Central Statistical Office, "Input-Output tables for the United Kingdom", Business Monitor PA1004, (HMSO 1983)

The results in table 6.9 show wide differences in regional defence spending. The South East attracts almost half of all UK defence equipment spending, although its population and share of UK total GDP are, respectively, only about 30 and 35 per cent. There may be a statistical bias towards the South East arising from cases where bills are paid to head offices in London for work actually done outside the region, but we do not believe that this "head office effect" is a large one.

The third column of table 6.9 (expenditure per head of population) provides a useful insight into the breakdown of expenditure by region. The national average was of around £120 per head in 1985/86. Of the eight English regions, two exceeded this level considerably, viz the South West and the South East, with £220 and £190 per head respectively. Two others - the North and the North West - enjoyed expenditure per head at roughly the national level. The figures for the other four English regions and for Scotland, Wales and Northern Ireland were all between one - and two-thirds of the overall average. Lowest of all was Yorkshire & Humberside (about £40 per head). These broad regional figures conceal much local variation, for example the concentration of defence spending in places like Bristol and Barrow-in-Furness.

Turning to employment, the table indicates that the proportion of jobs in the South East is somewhat smaller than the proportion of expenditure there. Scotland and Northern Ireland benefit substantially from the reverse effect, having markedly greater shares of total jobs than of expenditure.

Comparing the numbers of direct industrial jobs dependent on MOD expenditure on equipment with those in manufacturing industry as a whole shows that defence is an important, but not overpowering, contributor to that sector of the economy. In the South East, the South West, the North and Northern Ireland at least 1 in 20 manufacturing jobs are directly defence related.

The estimates provide an interesting but partial picture of the varying dependence of regional economies on defence equipment spending. In 1985/86 over 600,000 people in UK industry had a job that depended directly or indirectly on defence work - ie three times as many in total as the directly employed covered by Table 6.9. It is hoped however, that these estimates of regional expenditure and employment will contribute usefully to the assessment of the effects of defence spending within the UK economy.

6.9 Defence expenditure on equipment and associated direct employment: 1985-86

	Expenditure		Expenditure per head	Estimated Employment		Defence Share of Manufacturing Employment
	£million	%	£	thousands	%	%
Region						
North	400	6	130	15	7.5	5
Yorks and Humberside	200	3	40	4	2	1
East Midlands	300	4.5	80	8	4	2
East Anglia	100	1.5	50	4	2	2
South East	3,250	47.5	190	84	43	6
South West	1,000	14.5	220	22	11	6
West Midlands	250	3.5	50	7	3.5	1
North West	700	10	110	23	11.5	4
England	6,200	90.5	130	167	85	4
Scotland	400	6	80	18	9	4
Wales	150	2	50	3	1.5	1
N Ireland	100	1.5	60	8	4	7
United Kingdom	6,850	100	120	200[1]	100	4

1. Rounded

Additional information may be found in the following publications. Many of these are referenced in the CSO Guide to Official Statistics which also gives details of more general Defence interests.

Annual Abstract of Statistics. HMSO (The Defence Chapter includes longer runs of data for some of the tables included here).

Appropriation Accounts: Class 1 Defence (in Volume 1)

1980-81	HC 76 9 December 1981	1983-84	HC 614 23 October 1984
1981-82	HC 42 17 November 1982	1984-85	HC 592 23 October 1985
1982-83	HC 881 26 October 1983	1985-86	HC 586 21 October 1986
		1986-87	HC 107-I 23 October 1987

Armed Forces Pay Review Body reports

Eleventh	1982 Cmnd. 8549	Fourteenth	1985 Cmnd. 9526
Twelfth	1983 Cmnd. 8880	Fifteenth	1986 Cmnd. 9784
Thirteenth	1984 Cmnd. 9255	Sixteenth	1987 Cm. 126

Civil Service Statistics: HMSO; annual.

Declaration on Berlin: Cmd. 8564 dated 26 May 1952.

Economic Trends: HMSO; No 394 August 1986, contains an article entitled 'Central Government Expenditure on Research and Development in the 1984'.

Government's Expenditure Plans: 1988-89 to 1990-91, Cm. 288-I/II.

Guide to the Classification for Overseas Trade Statistics 1988: obtainable from the Controller, Statistical Office, Customs & Excise, Southend-on-Sea, SS2 9AL.

Hydrographer of the Navy: annual report; obtainable from the Hydrographic Department, MOD, Taunton, Somerset.

International Statistical Classification of Diseases, Injuries and Causes of Death: Ninth Revision (1977); World Health Organisation.

Meteorological Office : HMSO; annual report.

Navy, Army and Air Force Institutes (NAAFI): annual report and accounts; obtainable from NAAFI, Imperial Court, London, SE11.

Overseas Trade Statistics of the United Kingdom: HMSO; monthly and annually.

Reports on the Armed Forces Accommodation and Family Education surveys. Details of the material available may be obtained from Ministry of Defence (Stats Surveys), Northumberland House, Northumberland Ave, London, WC2N 5BP.

Reports on the health of the Armed Forces. Details of the material available may be obtained from Ministry of Defence (Medical Statistics), Government Buildings, Stanmore, Middlesex, HA7 4PZ.

Standard Industrial Classification; Revised 1980: HMSO.

Statistical News: HMSO; No 51 November 1980, contains an article entitled 'Employment and Defence' by Chris Pite.

Supply Estimates, Class 1 Defence

1981-82	HC 190	1985-86	HC 239-I
1982-83	HC 214-I	1986-87	HC 284-I
1983-84	HC 237-I	1987-88	HC 227-I
1984-85	HC 292-I	1988-89	HC 339-I

United Kingdom National Accounts: HMSO; annual.

References are to table numbers

A

Accommodation
  Married quarters 5.17
Age distributions
  Service pensioners 5.16
  Service personnel 5.10
Aid to civil ministries 6.3
Aircraft accidents 5.8, 5.9
Apprentices
  by establishment 4.11
  by location 4.12

B

Balance of payments 2.6
  Exports 2.7
  Imports 2.8
Broadcasting 5.15

C

Cadet forces 4.8
Casualties 5.8
Civilian staff
  Deployment in UK 4.13
  Deployment overseas 4.14
  MOD Total 4.9
  Occupational groups 4.10
Contracts 2.9
Contractors 2.10

D

Deaths of service personnel
  Total 5.6
  UDR 6.1
Defence budget expenditure
  Allocation by industry group 2.5
  Analysis by programme 2.3
  Equipment by region 6.9
  Equipment procurement 3.1
  National Accounts definition 2.1
  Offshore tasks 6.4
  Outturn figures 2.2
  Percentage of GDP 1.1
  Production and repair 3.4
  Principal headings 2.2
  Research and development 3.3
  Social expenditure 5.1
Deployment
  UK based manpower
    in UK 4.13
    overseas 4.14
Dockyards 3.7

E

Employment dependent on Defence expenditure 6.8
Energy consumption 3.6
Entertainment 5.14
Equipment
  Major projects 3.2
  Principal headings 2.2
  Procurement expenditure 3.1
Exports 2.7

F

Fishery protection 6.5
Front line units 1.2

H

Hospitals 5.3
Hydrographic Services 6.7

I

Imports 2.8
Industrial analysis 2.5

L

Land
  Holdings by location 5.12
  Holdings by use 5.13
Locally engaged/entered personnel 4.7

M

Married:
  Accommodation 5.17
  Numbers by age 5.10
  Numbers by rank 5.11
Medical
  Discharges 5.5
  Staff 5.2
Merchant fleet 1.3
Meteorological Office 6.6
Military salary 4.21
MOD strength by area 4.1

N

NAAFI 5.14
Northern Ireland 6.1

O

Occupational groups
  Civilian losses/recruitment 4.19
  Civilian strengths 4.10
  Service outflow 4.20
Offshore tasks 6.4
Outflow of Service personnel
  By category 4.18
  By service 4.17
  Trained 4.20
Overseas deployment
  Locally engaged/entered personnel 4.7
  UK based personnel 4.14

P

Pay indices and rates 4.21
Pensioners 5.16
Personnel strengths
  Civilian 4.9
  Service 4.4
Procurement expenditure 3.1
Production expenditure 3.4
Programme analysis
  Civilian personnel 4.3
  Defence budget 2.3
  Service personnel 4.2

Q

Qualifications 5.7

R

Rank distribution 5.11
Recruitment
  Civilian 4.19
  Service 4.15
  Service by category 4.16
Research & Development 3.3
Reserves and
  Auxiliary forces 4.6
Royal Dockyards 3.7

S

Seafarers 1.4
Search and rescue 6.2
Security in Northern Ireland 6.1
Sickness 5.4
Social expenditure 5.1
Sponsorship 5.7
SSVC 5.15
Stocks at major depots 3.5
Strengths
  Armed forces 1.2
  Cadet forces 4.8
  Civilians 4.9
  Regular forces 4.4
  Reserves 4.6
  Trained forces 4.5

U

Ulster Defence Regiment (UDR) 6.1
Uniformed medical staff 5.2

W

Works, buildings and land responsibilities 2.4

801344/3300/5/88

Designed by CS(Graphics)2e MOD

Printed by CS(RepS)LP Eastcote

HMSO publications are available from:

HMSO Publications Centre

(Mail and telephone orders only)
PO Box 276, London SW8 5DT
Telephone orders 01 622 3316
General enquiries 01 211 5656

HMSO Bookshops

49 High Holborn, London, WC1V 6HB 01 211 5656 (Counter service only)
258 Broad Street, Birmingham, B1 2HE 021 643 3757
Southey House, 33 Wine Street, Bristol, BS1 2BQ (0272) 24306/24307
9-21 Princess Street, Manchester, M60 8AS 061 834 7201
80 Chichester Street, Belfast, BT1 4JY (0232) 238451
13a Castle Street, Edinburgh, EH2 3AR 031 225 6333

HMSO's Accredited Agents

(see Yellow Pages)

And through good booksellers

ISBN 0 10 103443 1

Statement on the Defence Estimates 1987

2

DEFENCE STATISTICS

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1987

LONDON
HER MAJESTY'S STATIONERY OFFICE

£5.50 net

Cm 101-II

Statement on the Defence Estimates 1987

2

DEFENCE STATISTICS

Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty 1987

LONDON
HER MAJESTY'S STATIONERY OFFICE

£5.50 net

Cm 101-II

Contents

		Page
1	**Introduction**	4
1.1	Summary	5
1.2	Strength of the Armed Forces	6
1.3	Merchant vessels available for defence purposes	7
1.4	UK Merchant Fleet: Number of Seafarers	7
2	**Finance and trade**	
2.1	The Defence budget and its relation to defence expenditure	8
2.2	Principal headings of the Defence budget	9
2.3	Analysis of the Defence budget by programme	10
2.4	Works buildings and land: Departmental responsibilities	11
2.5	Industrial anlaysis of Defence expenditure in the UK: by commodity group	11
2.6	Defence balance of payments: invisible transactions	12
2.7	Exports of defence equipment	13
2.8	Imports of defence equipment	13
2.9	Contracts placed: analysis by type of contract	14
3	**Equipment**	
3.1	Equipment procurement expenditure	15
3.2	Major equipment projects	16
3.3	Defence research and development expenditure	17
3.4	Defence production expenditure	18
3.5	Service supply systems: major stockholdings	19
3.6	Defence energy consumption	20
3.7	Royal Dockyards	21
4	**Manpower**	
4.1	Total MOD strength by area	22
4.2	Percentage distribution of manpower by major programme	23
4.3	Analysis of Service personnel by programme	24
4.4	Analysis of civilian staff by programme	25
4.5	Strengths of UK Regular Forces	26
4.6	Strengths of trained UK Regular Forces	27
4.7	Strengths of the Reserves and Auxiliary Forces	28
4.8	Strengths of locally entered personnel	29
4.9	Strengths of Cadet Forces	29
4.10	Strengths of civilian staff in MOD	30
4.11	Strengths of occupational groups	30
4.12	Civilian apprentices: type of establishment	31
4.13	Civilian apprentices: location	31
4.14	Deployment of manpower: UK	32
4.15	Deployment of UK based personnel: overseas	33
4.16	Recruitment of UK Service personnel: by Service	34
4.17	Recruitment of male UK Service personnel: by category	35
4.18	Outflow of UK Service personnel: by Service	36
4.19	Outflow of UK Service personnel: by category	37
4.20	Occupational recruitment and losses	38
4.21	Outflow of trained Service Personnel: major skill or trade group	39
4.22	Indices and illustrative rates of military salary	40
5	**Welfare**	
5.1	Social expenditure in the Defence budget	42
5.2	Strengths of uniformed medical staff	42
5.3	Service hospitals	43
5.4	Sickness of UK Service personnel	44
5.5	Medical discharges of UK Service personnel	45
5.6	Deaths of UK Service personnel	45
5.7	Service aircraft: accidents involving loss or serious damage, rates and casualties	46
5.8	Aircraft accidents in 1986	47
5.9	Strengths of male UK Service Personnel and numbers married: by age	48
5.10	Strengths of male UK Service Personnel and numbers married: by rank	49
5.11	Selected qualifications obtained under Service sponsorship	50
5.12	Service married accommodation	51
5.13	Land and foreshore holdings: location	52
5.14	Land and foreshore holdings: type of use	53
5.15	Service entertainment and welfare	54
5.16	SSVC Broadcasting Division (BFBA)	55
5.17	Service pensioners	56

		Page
6	Defence services	
6.1	Armed Forces and security in Northern Ireland	57
6.2	Search and rescue operations at home	58
6.3	Military aid to civil ministries during disputes	59
6.4	Expenditure on offshore tasks included in the Defence budget	59
6.5	Fishery protection	60
6.6	Hydrographic services	61
6.7	Meteorological Office	62
	Bibliography	63
	Index	64

General notes on the tables

Symbols

- nil or less than half the final unit shown
.. not available
* not applicable
nes not elsewhere specified

Sources

Except where otherwise stated all information is from records maintained by the Ministry of Defence for departmental purposes.

Rounding

In many of the tables the figures are individually rounded and thus may not sum precisely to the totals shown.

A publication of the Government Statistical Service

Government Statistical Service

A service of statistical information and advice is provided to the Government by specialist staffs employed in the statistical divisions of the individual Departments. Statistics are made generally available through their publications and further information and advice on them can be obtained from the Departments concerned.

This years Volume includes various changes in both the content and presentation of the information compared with last year. These are described below.

New Tables

i. Information about major equipment projects is shown in table 3.2, in a form similar to that supplied last year to the House of Commons Defence Committee.

ii. Details of aircraft accidents in 1986 are provided in table 5.8. This information was previously made available in Annex F to Volume 1 of the Statement on the Defence Estimates.

Revised Tables

Table 1.1, the summary, now includes data on defence and other spending in the National Income, which was previously shown in Chapter 2. In addition, the summary has been shortened to show the main features of defence statistics.

Table 1.3 provides information about merchant vessels available for defence purposes. It has been extended to show vessels registered in Dependent Territories separately from vessels registered in the UK.

Table 3.5, describes Service Supply Systems. The value of issue and receipt transactions at storage depots are included to help in the interpretation of the figures given for the value of stocks held.

The format of table 3.6 has been revised to distinguish operational fuels from non-operational fuels.

Discontinued Tables

Student numbers in selected Service colleges and data about Service childrens education have been omitted from this years volume, as a result of an internal review.

In addition, the table on house ownership by Service personnel, has been dropped until there are new data to present. Readers are referred to table 5.14 of the 1986 Volume for information about house ownership.

Chapter Notes

Notes, which were previously included at the beginning of each chapter, are now shown, where possible, with the tables to which they refer, either as introductions to the tables or as additional foot notes.

Editorial Changes

The main changes to the tables are described above, but several minor changes have also been made. For example the titles to some of the tables have been revised to improve the description and presentation of the data. The other noticeable change in presentation is the use of two colours; the latest years data are printed in blue, to distinguish them from those of previous years.

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
	£ million					
Defence Budget (Supply estimates)	11,785	12,274	14,091	15,973	17,033	18,059
Defence expenditure (National Accounts definition)	11,113	12,668	14,534	16,394	17,431	18,467
Defence Budget expenditure (Outturn)	11,182	12,607	14,412	15,487	17,122	17,943
of which: Personnel	4,556	5,058	5,455	5,726	5,983	6,379
Equipment	4,885	5,638	6,297	6,939	7,838	8,193
Other	1,741	1,910	2,659	2,822	3,302	3,370
Defence balance of payments: invisible transactions						
Total debits	1,021	1,183	1,452	1,254	1,453	1,548
Total credits	119	114	104	148	159	164
Net balance	-902	-1,068	-1,348	-1,106	-1,293	-1,384
	1981	1982	1983	1984	1985	1986
Defence visible trade: identifiable equipment						
Exports (£ million f.o.b)	613	904	919	825	813	826
Imports (£ million c.i.f.)	137	199	207	253	246	295
Manpower at April each year	Thousands					
Service						
UK Regular Forces	334	328	321	326	326	323
Locally entered	10	10	10	10	10	10
Regular reserves	196	196	193	198	206	211
Volunteer reserves	84	86	87	86	89	95
Cadet Forces	151	149	149	146	145	143
Civilian						
MOD Total	265	252	243	233	206	202
Non-industrial	124	119	116	114	105	104
Industrial	141	133	127	119	101	98
UK based	230	217	209	199	174	169
Locally engaged	35	35	34	33	32	32
	£ billion at market prices					
UK Gross Domestic Product	253.9	276.2	301.1	320.2	351.6	..
General government total expenditure [1]	116.8	128.5	138.7	146.7	157.5	..
of which:						
Defence	12.7	14.5	15.9	17.2	18.3	..
Education	14.3	15.3	16.3	17.1	17.5	..
Health	13.4	14.1	15.9	16.8	17.8	..
Defence expenditure as a percentage of Gross Domestic Product	5.0	5.2	5.3	5.4	5.2	5.1

Source: United Kingdom National Accounts 1986 Edition

1. Including debt interest and allowance for non-trading capital consumption not allocated to specific services.
2. Provisional estimate.

This table presents a summary of the units shown in Annexes B, C and D of Volume 1. The number of personnel and the amount of equipment in each vessel, regiment, battalion or squadron vary according to the role currently assigned.

1 April

Number

	Unit	1981	1982	1983	1984	1985	1986	1987[1]
Front line units								
Royal Navy[3]								
Submarines	Vessels	22	22	21	22	24	26	26
Carriers and assault ships	Vessels	3	3	4	4	4	4	3
Destroyers and frigates	Vessels	48	49	55	52	46	47	46
Mine counter-measure	Vessels	32	33	36	34	32	39	36
Patrol ships and craft	Vessels	22	21	25	31	29	32	29
Fixed wing aircraft	Squadrons	3	3	3	3	3	3	3
Helicopters	Squadrons	14	15	13	12	14	14	14
Royal Marines	Commandos	3	3	3	3	3	3	3
Regular Army								
Royal Armoured Corps	Regiments	19	19	19	19	19	19	19
Royal Artillery	Regiments	22	22	22	22	22	22	22
Royal Engineers[4]	Regiments	11	11	12	12	13	13	13
Infantry[4]	Battalions	56	57	56	56	56	56	55
Special Air Service	Regiments	1	1	1	1	1	1	1
Army Air Corps	Regiments	6	6	4	4	4	4	4
Territorial Army								
Royal Armoured Corps	Regiments	2	2	5	5	5	5	5
Royal Artillery	Regiments	5	5	5	5	5	6	6
Royal Engineers	Regiments	7	7	7	7	7	7	7
Infantry	Battalions	38	38	35	35	35	40	40
Special Air Service	Regiments	2	2	2	2	2	2	2
Honourable Artillery Company	Regiments	1	1	1	1	1	1	1
Royal Air Force								
Strike/attack	Squadrons	15	12	10	11	11	11	11
Offensive support	Squadrons	5	5	5	5	5	5	5
Air defence	Squadrons	9	9	9	8	9	9	9
Maritime patrol	Squadrons	4	4	4	4	4	4	4
Reconnaissance	Squadrons	5	3	2	3	3	3	3
Airborne early warning	Squadrons	1	1	1	1	1	1	1
Transport[5]	Squadrons	9	10	11	10	11	12	12
Tankers	Squadrons	2	2	3	3	3	4	3
Search and rescue	Squadrons	3	3	3	2	2	2	2
Surface to air missiles	Squadrons	8	8	8	8	8	8	8
Ground defence	Squadrons	6	6	6	5	5	5	5
Royal Auxiliary Air Force								
Ground Defence	Squadrons	3	3	6	6	6	6	6
Air Defence Guns	Squadrons	-	-	-	-	-	1	1
Support units								
Royal Navy and Royal Fleet Auxiliary Service								
Support ships	Vessels	3	2	2	2	2	3	3
Hospital ships	Vessels	1	1	1	1	1	1	0
Training ships	Vessels	7	5	7	6	4	4	3
Survey ships	Vessels	12	11	11	12	8	7	8
Tankers[6]	Vessels	12	14	10	11	14	14	14
Replenishment ships[6]	Vessels	3	3	3	4	4	4	4
Support and Supply ships[6]	Vessels	4	3	1	1	2	2	1
Landing ships, logistic[6]	Vessels	5	5	6	6	5	6	6
Forward repair ships[6]	Vessels	-	-	-	-	1	1	1
Royal Marines								
Logistic unit	Regiments	1	1	1	1	1	1	1

1. Figures for the current year are provisional.
2. Units which comprise the 'teeth' elements of the Armed Forces.
3. Excludes vessels undergoing major or restorative refit, conversion, or on stand-by etc.
4. Includes Gurkhas.
5. Includes helicopters.
6. Ships of the Royal Fleet Auxiliary Service.

134

31 December

Number

	1984	1985	1986
Vessels registered in the UK			
Large stern trawlers [2]	17	12	4
Other fishing trawlers offshore support etc	387	365	331
Product tankers [3]	94	87	42
Break-bulk general cargo vessels	177	177	152
Large passenger liners	3	3	2
Roll on-Roll off ferries, passenger and freight	70	70	63
Salvage tugs	102	106	96
Vessels registered in Dependent Territories			
Large stern trawlers [2]	..	..	0
Other fishing trawlers offshore support etc	..	..	2
Product tankers [3]	..	..	61
Break-bulk general cargo vessels	..	..	85
Large passenger liners	..	..	0
Roll on-Roll off ferries, passenger and freight	..	..	10
Salvage tugs	..	..	2

Source: Department of Transport

1. Vessels, in the principle categories required for defence purposes, which are available within required timescales and could be requisitioned under the Royal prerogative.

2. For 1986 these are vessels of 2,000 BHP and over. For earlier years the figures include vessels with less than 2,000 BHP which were considered to be suitable for minesweeping. Trials subsequently established that these vessels have insufficient power to meet the minesweeping requirement.

3. 2,000 to 60,000 DWT.

Yearly Averages

	1981	1982	1983	1984	1985	1986
Officers	27,857	25,104	20,635	17,646	15,523	13,056
Ratings	27,422	25,224	22,624	20,251	19,095	17,612
Misc and seasonal	800	421	387	632	604	796
Cadets	5,197	4,022	2,732	1,625	1,016	727

1. These numbers are based upon the General Council of British Shipping (GCBS) register for the years indicated as available for employment in National Maritime board (NMB) agreements with the council's members. They include some foreign seafarers on NMB agreements and some seafarers on non-UK flag vessels registered with the GCBS for manning purposes. The totals in these two categories are not known but estimated at 5% of the current total. The figures do not include UK seafarers not employed on NMB agreements, currently estimated at 9,000. The figures for 1986 are provisional.

Figures are based on the *Supply Estimates* and reflect the price levels of *Supply Estimates* for the years in question.

£ million

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
[illegible]	12,138.3	13,945.4	15,791.5	16,817.8	17,868.9	18,485.9	[illegible]
Attributions from other votes [1]	126.7	138.1	173.1	204.2	177.9	-	1.7
Other adjustments [2]	8.8	7.1	8.0	11.2	11.7	-6.4	-8.5
[illegible]	12,273.8	14,090.6	15,972.6	17,033.2	18,058.5	18,479.5	[illegible]
[illegible]	11.4	14.9	14.6	13.0	13.9	13.6	10.7
[illegible] [3]							
Accommodation (maintenance and rental) [4]	66.0	62.6	†	†	†	†	†
Home publicity [4]	7.5	7.2	7.1	†	†	†	†
Civil superannuation	248.8	254.1	333.0	362.3	347.8	384.9	320.2
Rates [5]	92.7	119.2	78.9	56.7	81.3	123.2	128.6
Services by National Audit Office	2.6	2.7	3.2	4.4	5.0	4.2	2.2
Services by Treasury Solicitor [6]	2.3	2.7	2.6	2.7	2.7	2.7	2.9
Valuation services by Inland Revenue [6]	0.1	0.1	0.1	0.1	0.2	0.2	0.3
Various other services	1.8	1.9	1.8	1.9	1.9	1.6	2.2
[illegible]	-34.2	-36.7	-34.5	-41.3	-43.9	-41.8	-49.7
[illegible] [7]	-4.2	14.8	14.0	-2.1	-	-	-
[illegible]	12,668.3	14,533.7	16,393.5	17,430.8	18,467.4	18,968.1	19,199.4

(NATO and National Accounts definitions)

1. These represent Property Service Agency staff costs and other PSA expenditure for which the Secretary of State for Defence is responsible. From 1985-86, consultants' fees in respect of major works are included in Defence Votes totals. From 1986-87, all PSA expenditures are included in Defence Votes totals. From 1987/88, this represents PSA expenditure on major works on the Civil Estate funded from the Defence Budget.

2. These cover those Appropriations-in-Aid and expenditure which are included in the Defence Votes but not classified as public expenditure.

3. These are the Defence portion of services performed by certain government departments for government generally.

4. A dagger † against these items indicates that they have been included in the Defence budget for the years shown.

5. Rates on the Defence portion of the UK civil estate are included in the Defence budget from 1983-84.

6. Prior to 1981-82 included under 'Various other services'.

7. These adjustments are necessary to give the standard NATO and National Accounts definitions of defence expenditure, which have been identical since 1979-80.

Appropriation Accounts are prepared after the end of the financial year and record the actual payments and receipts.
Appropriations-in-Aid are receipts used to offset expenditure. They generally arise from the provision of repayment services, the sale of surplus goods or of equipment purchased on behalf of the Defence Sales organisation.
Defence budget consists of all the expenditure for which the Secretary of State for Defence is responsible. It comprises the net total of voted expenditure by the Ministry of Defence and by the Property Services Agency on behalf of the Ministry of Defence which are classified as direct public expenditure for the purpose of public expenditure white papers and the national accounts.
Estimates, Supply Estimates are prepared before the beginning of the financial year and give the proposed expenditure. These are then voted by Parliament.
Estimates prices are the prices used in the Estimates presented to Parliament. They are forecasts of the prices expected to rule when the expenditure occurs.

135

	Outturn					Estimates [1]	
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Total expenditure[2,3]	12,607	14,412	15,487	17,122	17,943	18,479	18,782[4]
Expenditure on personnel	5,058	5,455	5,726	5,983	6,379	6,721	7,028
of the Armed Forces	2,728	2,914	3,076	3,236	3,510	3,678	3,943
of the retired Armed Forces	624	680	777	828	858	979	1,050
of civilian staff	1,706	1,861	1,873	1,919	1,970	2,065	2,035
Expenditure on equipment	5,638	6,297	6,939	7,838	8,193	8,250	8,539
Sea	1,624	1,730	1,849	2,228	2,469	2,586	2,940
Land	1,101	1,353	1,475	1,638	1,557	1,712	1,690
Air	2,458	2,640	3,057	3,474	3,258	3,364	3,322
Other	456	574	558	498	511	588	587
Other expenditure	1,910	2,659	2,822	3,302	3,370	3,508	3,215
Works, buildings and land	664	832	1,067	1,271	1,413	1,440	1,411
Miscellaneous stores and services	1,246	1,827	1,754	2,031	1,956	2,068	1,805
Total expenditure at constant (1985-86) prices	16,073	17,051	17,287	17,969	17,943	17,611	17,253
Outturn figures adjusted for carry-forward	16,073	17,051	17,567	17,844	18,053	17,611	17,253
of which estimated Falklands	-	929	711	676	572	421	236
	Per cent						
Percentage shares of the total expenditure							
Expenditure on personnel	*40.1*	*37.8*	*37.0*	*34.9*	*35.6*	*36.4*	*37.4*
the Armed Forces	*21.6*	*20.2*	*19.9*	*18.9*	*19.6*	*19.9*	*21.0*
Retired Armed Forces	*4.9*	*4.7*	*5.0*	*4.8*	*5.0*	*5.3*	*5.6*
of civilian staff	*13.5*	*12.9*	*12.1*	*11.2*	*11.0*	*11.2*	*10.8*
Expenditure on equipment	*44.7*	*43.7*	*44.8*	*45.8*	*45.7*	*44.6*	*45.5*
Sea	*12.9*	*12.0*	*11.9*	*13.0*	*13.9*	*14.0*	*15.7*
Land	*8.7*	*9.4*	*9.5*	*9.6*	*10.5*	*9.3*	*9.0*
Air	*19.5*	*18.3*	*19.7*	*20.3*	*18.4*	*18.2*	*17.7*
Other	*3.6*	*4.0*	*3.6*	*2.9*	*2.3*	*3.2*	*3.1*
Other expenditure	*15.2*	*18.5*	*18.2*	*19.3*	*18.8*	*19.0*	*17.1*
Works, buildings and land	*5.3*	*5.8*	*6.9*	*7.4*	*7.9*	*7.8*	*7.5*
Miscellaneous stores etc	*9.9*	*12.7*	*11.3*	*11.9*	*10.9*	*11.2*	*9.6*

1. Figures in these columns are derived from the original *Supply Estimates* for the years quoted. Current forecast outturn at constant (1985- 86) prices is £17,604 million.

2. Outturn and Estimates are given at outturn and Estimates prices respectively.

3. The decision to contractorise the Royal Dockyards from April 1987 has the effect of increasing Sea Systems expenditure and decreasing expenditure on personnel and miscellaneous stores and services.

4. Includes £960 million of direct dollar expenditure and £820 million of direct Deutschemark expenditure, excluding local drawings of pay and allowances. As is customary, the relevant exchange rates used in costing the Defence Estimates are those prevailing at the end of June in the previous year ie £1 = $1.5 = DM3.36.

Outturn, forecast outturn describes actual expenditure or estimates of it made on the basis of incomplete information ie before the Appropriation Accounts are prepared.
Outturn prices are the prices of the period when the expenditure occurs, also described as current prices.

2.3 Analysis of the Defence budget by programme[1]

£ million

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Total defence budget	12,274	14,091	15,973	17,033	18,059	18,479	18,782
Nuclear strategic force	269	327	382	384	509	658	882
Navy general purpose combat forces[2]	1,663	1,861	2,149	2,493	2,505	2,625	2,491
Submarines	339	463	468	322	408	426	421
Aircraft and ASW carriers	26	71	140	94	78	74	83
Amphibious forces	52	52	60	78	81	82	87
Destroyers and frigates	594	636	722	691	738	792	756
Mine counter-measures vessels	90	150	159	137	145	147	115
Other vessels	210	204	285	466	452	460	451
Aircraft	175	198	242	312	291	304	251
Fleet headquarters	23	26	24	123	119	118	111
Overseas shore establishments	59	61	49	61	37	48	45
Naval bases and operational support	..	..	..	209	156	174	171
European theatre ground forces	1,881	2,194	2,445	2,626	2,764	2,814	3,035
British Army of the Rhine	1,302	1,512	1,700	1,796	1,899	1,882	2,044
Berlin[3]	27	38	42	47	49	52	55
Home forces	552	644	703	783	816	880	936
Other Army combat forces	44	41	191	197	205	204	177
Mediterranean	56	62	62	68	81	84	74
Hong Kong and other Far East	-35	-36	1	-8	-27	8	11
South Atlantic	-	-	105	113	126	82	44
Other areas	23	15	23	24	25	30	48
Air Force general purpose forces	2,240	2,729	3,207	3,409	3,702	3,687	3,416
Air defence	287	453	579	702	730	817	717
Offensive support	76	83	118	116	202	320	387
Strike/attack/reconnaissance	785	1,005	922	775	817	802	635
Maritime aircraft	108	143	139	135	162	131	114
Transport aircraft	168	164	231	221	254	226	222
Tanker aircraft	43	42	128	200	135	93	89
Civil charter	14	18	17	30	37	18	22
Other aircraft	100	112	122	135	132	245	186
Operational stations	279	328	418	464	526	428	428
Headquarters	57	54	68	76	79	80	90
General support	323	327	465	555	628	527	526
Reserve and Auxiliary formations	253	287	312	357	360	358	385
Navy	12	14	15	16	14	18	20
Army	222	255	279	316	316	323	342
Air Force	19	18	18	25	30	17	23
Research and development[4]	1,676	1,833	1,896	2,097	2,304	2,327	2,337
Ship construction and underwater warfare	298	287	328	390	424	429	377
Ordnance and other Army	150	164	177	182	188	138	142
Military aircraft	498	596	556	508	524	648	667
Guided weapons	223	235	245	314	362	311	341
Other electronics	259	284	282	340	397	427	325
Other research and development	248	267	308	363	409	374	485
Training	1,097	1,162	1,230	1,310	1,294	1,257	1,277
Service colleges	78	75	85	99	86	100	111
Navy	358	418	443	407	395	391	391
Army	429	420	428	527	538	514	520
Air Force	232	249	274	277	275	252	255
Equipment support and associated facilities in UK	814	869	1,040	931	917	983	881
Royal Dockyards	114	125	128	113	107	125	7
Other repair and maintenance	257	272	401	348	319	304	338
Storage and supply	337	357	403	359	394	456	428
Quality assurance	106	115	108	111	97	98	108
War and contingency stocks	326	403	410	549	535	405	588
Navy	94	110	161	204	206	218	221
Army	145	202	165	225	198	170	139
Air Force[5]	87	91	84	120	131	17	228
Other support functions	2,081	2,307	2,631	2,811	2,998	3,184	3,373
Whitehall organisations	195	205	222	236	248	273	306
Local administration communications etc in UK	812	903	1,080	1,184	1,309	1,380	1,496
Meteorological services[4]	34	37	34	41	44	41	46
Family and personnel services in UK	229	240	241	251	223	242	226
Service pensions	603	657	754	832	923	986	1,053
Other support services	208	265	300	267	251	262	246
Miscellaneous expenditure and receipts	-70	78	80	-131	-34	-23	-60

1. Functional categories or programme elements are combined into major groupings of expenditure which correspond with major fields of defence activity called programmes.
2. The attribution of Royal Naval expenditure was changed in 1983-84, thus figures prior to 1983-84 are not fully comparable with later data.
3. Excluding expenditure covered by the Allied 'Declaration on Berlin'.
4. Meteorological research and development is included under Meteorological services.
5. The attribution of RAF war stocks was amended in 1986-87 and then revised again in 1987-88. Figures for these years are not comparable with each other nor with earlier years.

2.4 Works, buildings and land: Departmental responsibilities

£ million

	Outturn					Estimates [1]	
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Total defence budget expenditure [2]	664	832	1,067	1,271	1,413	1,440	1,411
MOD net total [3]	-73	-51	-51	-6	-32	-33	-68
PSA net total	737	883	1,118	1,277	1,445	1,473	1,479
New works gross total	316	394	584	707	778	838	886
Maintenance gross total	425	506	548	542	597	607	627
Personnel costs [4]	140	161	209	251	290	288	325
Appropriation-in-aid total	-144	-177	-223	-222	-220	-260	-359

1. Figures in this column are derived from the original *Supply Estimates* for that year.
2. Outturn and Estimates are given at outturn and Estimates prices respectively.
3. Including accommodation charges as appropriate.
4. Includes the costs of PSA and DOE staff and consultants and overheads attributable to defence work. From 1985-86, consultants' fees in respect of major works are included in the new works total.

2.5 Defence expenditure in the UK: estimated breakdown by commodity

£ million

	SIC (80) Group [1]	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
Total [2]		5,103	6,180	6,954	7,096	8,014	8.128
Solid fuels [3]	111.120	8	9	10	10	11	10
Petroleum products [3]	140	396	512	847	673	737	601
Gas, electricity and water supply [3]	161-170	133	160	173	182	195	213
Ordnance, small arms and ammunition	329	428	437	532	584	675	699
Other mechanical and marine engineering	320-328	303	278	347	410	407	415
Data processing equipment	330	158	90	77	97	104	121
Other electrical engineering	341-348, nes		131	127	119	136	135
Electronics	344, 345	1,014	1,219	1,311	1,550	1,638	1,557
Motor vehicles and parts	351-353	184	162	209	187	274	288
Shipbuilding and repairing	361	424	544	517	425	557	660
Aerospace equipment	364	1,497	2,007	2,093	2,070	2,461	2,531
Instrument engineering	371-374	138	173	146	125	115	118
Food [3]	411-429	101	103	115	113	126	132
Textiles, leather goods and clothing [3]	431-456	80	73	84	93	111	124
Other production industries	111-495, nes	130	158	185	243	237	271
Other industries and services	nes	109	124	181	215	230	253

1. Groups in the Standard Industrial Classification (1980 revision)
2. Gross expenditure at current prices excluding VAT, pay and allowances, general administrative expenses (amounting to some £704 million in 1985-86), Property Services Agency expenditure on behalf of the Ministry of Defence and other expenditure on land, buildings and works services.
3. Includes payments for goods and services purchased overseas.

£ million

	Outturn					Estimates[2]	
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Total debits	1,183	1,452	1,254	1,453	1,548	1,537	1,649
Total military services	1,156	1,427	1,219	1,411	1,495	1,488	1,599
Local defence expenditure	925	1,070	1,008	1,128	1,216	1,227	1,382
Germany	784	858	790	894	981	966	1,134
Other NATO area	57	63	75	78	86	87	87
Mediterranean	94	98	111	124	122	143	140
South Atlantic	-	9	8	3	5	3	4
Far East	-40	4	-9	-7	-18	-12	-22
Other areas	30	38	34	36	41	41	39
Other military services[3]	231	357	210	282	279	262	217
Transfers - contributions to international defence organisations	27	25	36	42	52	49	50
Total credits	114	104	148	159	164	226	252
Receipts from US Forces	72	83	126	137	145	203	223
Other receipts	43	21	22	23	19	23	29
Net balance (- = debit)	-1,068	-1,348	-1,106	-1,293	-1,384	-1,311	-1,397

1. This table covers transactions by the British Government in relation to Defence and includes receipts from the United States Government in respect of forces stationed in the United Kingdom. The figures for local Defence expenditure represent the drawings of foreign exchange necessary to support our forces overseas. They take no account of offsetting factors such as the reduction in imports to the United Kingdom which result from the stationing of forces overseas, which would be accounted for in the UK balance of payments generally. In addition, estimates are made of non-governmental transactions relating to defence. Official payments by the United States Forces in the United Kingdom to British firms and agencies other than central government plus private expenditure by United States personnel are expected to amount to about £570 million in 1987-88. Outturn and Estimates are given at outturn and Estimates prices respectively.

2. Figures are derived from the original *Supply Estimates* for the years quoted.

3. Including contributions to infrastructure projects (net) and payments for R&D levies. Receipts for R&D levies, etc are entered as 'other receipts'.

2.7 Exports of defence equipment

£ million

	1981	1982	1983	1984	1985	1986
Defence equipment at free on board prices identified by Customs and Excise [1]	613	904	919	825	813	826
Armoured fighting vehicles and parts	112	208	195	146	127	87
New combat aircraft including helicopters	71	126	184	156	71	146
New military non-combat aircraft including helicopters	66	90	76	56	103	46
Warships	4	27	7	40	4	12
Guns, small arms and parts	51	68	66	121	155	133
Guided weapons and missiles	21	61	61	52	55	39
Ammunition	175	184	145	93	85	209
Radio and radar apparatus	96	100	125	106	128	115
Optical equipment and training simulators	19	39	60	56	85	40
Destination of identified equipment						
NATO countries and other W Europe	172	185	206	175	247	209
Middle East and N Africa	239	405	506	311	284	412
Other Africa	67	97	55	201	155	68
Asia and Far East	124	192	137	108	73	100
Latin America and Caribbean	11	25	16	30	54	38
Estimates of additional aerospace equipment [2]	1,133	1,160	1,189	1,310	..	..
Airframe parts and guided weapons	417	343	358	448	..	..
Aircraft equipment	169	194	210	235	..	..
Aeroengines and parts	123	165	155	147	..	..
Space equipment	19	26	31	30	..	..
Other electronics	280	300	320	330	..	..
Road vehicles	125	132	115	120	..	..

1. These figures refer to actual deliveries of Defence equipment and are different from the figure given for Defence Sales in Volume 1 which is for new contracts recorded.

2. It is not possible to distinguish between military and civil goods under these headings in Customs and Excise records. These estimates of military exports are based on figures from the Society of British Aerospace Companies. Exports for collaborative projects are excluded.

2.8 Imports of defence equipment

£ million

	1981	1982	1983	1984	1985	1986
Identified Defence equipment	137	199	207	253	246	295
Guided weapons and missiles	57	108	85	102	119	175
Ammunition	16	18	17	16	35	58
Guns, small arms and parts	29	27	36	33	40	38
Armoured fighting vehicles and parts	4	14	21	10	10	5
Radio, radar and optical equipment	21	28	47	38	24	17
Military aircraft including helicopters	11	3	-	54	18	3
Origins of identified equipment						
NATO countries and other W Europe	128	184	178	239	220	268
Asia and Far East	3	5	3	5	16	11
Others	6	9	25	9	10	16

	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
	£ million						
Total value of Headquarters contracts placed[1]	5,831	4,089	4,606	6,830	8,580	8,217	7,523
	Per cent						
Percentage shares of total value							
Contracts priced by competition	14	22	23	21	22	27	38
Contracts priced otherwise by reference to market forces[2]	16	14	14	15	16	19	26
Contracts priced on estimates at outset or as soon as possible thereafter[3]	36	35	40	45	37	31	24
Contracts priced on actual costs with incentives to minimise costs[3]	1	7	2	3	10	11	3
Contracts priced on actual costs plus a percentage fee[3]	22	22	21	16	15	12	9
	Number						
Total number of Headquarters contracts placed[4]	89,111	76,368	66,177	85,716	82,094	96,458	116,552
	Per cent						
Percentage shares of total number							
Contracts priced by competition	14	13	14	11	12	12	12
Contracts priced otherwise, by reference to market forces[2]	63	59	55	65	65	70	74
Contracts priced on estimates at outset or as soon as possible thereafter[3]	13	16	17	13	12	10	8
Contracts priced on actual costs with incentives to minimise costs[3]	1	1	1	1	1	1	1
Contracts priced on actual costs plus a percentage fee[3]	9	11	13	10	10	7	5

1. Including the value of amendments to existing contracts.
2. Includes use of informal competitive tendering procedures and commercial price lists (appropriately discounted).
3. Priced by reference to the Government profit formula.
4. Including the number of amendments which had financial implications for existing contracts.

£ million

	Outturn					Estimates [2]	
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88 [3]
Procurement expenditure	6,121	6,815	7,504	8,573	8,979	9,048	9,405
Equipment	5,638	6,297	6,939	7,838	8,193	8,250	8,539
Associated costs	483	518	565	735	785	798	866
Procurement expenditure	6,121	6,815	7,504	8,573	8,979	9,048	9,405
Research	1,688	305	357	393	399	398	401
Development [4]		1,395	1,556	1,713	1,867	1,860	1,945
Production and repair	4,433	5,115	5,591	6,467	6,712	6,791	6,978
Sea	1,624	1,730	1,849	2,228	2,499	2,586	2,940
Development	281	262	344	439	510	476	500
Production and repair	1,343	1,468	1,506	1,789	1,990	2,110	2,440
Land	1,101	1,353	1,475	1,638	1,887	1,712	1,690
Development	236	211	229	258	278	303	274
Production and repair	864	1,142	1,246	1,379	1,609	1,409	1,416
Air	2,458	2,640	3,057	3,474	3,296	3,364	3,242
Development	513	461	571	594	616	611	661
Production and repair	1,945	2,179	2,486	2,880	2,680	2,753	2,580
General support	939	1,092	1,123	1,233	1,297	1,386	1,451
Research	657	305	357	393	399	398	401
Development [4]		461	412	421	464	470	509
Production	282	325	353	419	434	519	541

1. This table is derived from the Appropriation Accounts and the Supply Estimates. Outturn and Estimates are given at outturn and Estimates prices respectively. Payments to civil votes and central government funds are included, but not superannuation and certain support costs.

2. All Air System package deal expenditure is included under Production.

3. 'Procurement' is consistent with the Supply Estimates, but 'Development' has been amended to reflect the decision to purchase AWACS in place of Nimrod AEW.

4. These figures include the costs of some Headquarters staff who are responsible for both research and development.

£ million

	Outturn					Estimates [2]	
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Gross expenditure	5,046	5,752	6,131	6,961	7,055	7,190	7,415
Sea equipment	1,469	1,601	1,650	1,925	2,128	2,267	2,626
Ships hulls and machinery	519	499	500	555	572	573	631
Weapon systems etc	483	555	582	727	787	938	895
Ship equipment and support services	87	92	92	91	129	127	144
Ship/weapon maintenance, equipment, stores and services	256	324	332	401	458	456	498
Dockyard services etc	125	132	144	151	182	172	459
Land equipment	1,103	1,433	1,398	1,573	1,699	1,487	1,496
Guns, small arms and chemical defence stores	53	45	29	26	23	59	65
Ammunition, mines and explosives	252	288	279	322	302	209	243
Fighting vehicles	82	101	118	131	155	161	188
Load carrying vehicles	102	133	119	155	167	145	163
Engineering equipment	39	77	73	75	85	66	53
Guided weapons	167	235	254	244	259	201	206
Communications	161	227	202	239	284	242	191
Surveillance equipment	67	95	95	86	85	100	80
Other stores	6	6	7	5	6	8	8
Maintenance	174	226	222	290	333	296	299
Air equipment	2,167	2,362	2,682	3,003	2,761	2,882	2,713
Aircraft, aero-engines and aircraft equipment	1,654	1,699	1,730	2,002	1,771	1,814	1,492
Guided weapons and electronic equipment	513	662	952	1,001	990	1,068	1,221
General support [3]	306	356	401	460	467	554	580
Appropriations-in-aid [4]	612	637	540	494	343	399	437
Sea equipment	127	133	144	136	138	156	187
Land equipment	239	291	153	194	90	79	80
Air equipment	223	182	196	123	81	129	133
General support	24	31	48	41	33	36	38
Net expenditure	4,433	5,115	5,591	6,467	6,712	6,791	6,978
Sea equipment	1,343	1,468	1,506	1,789	1,990	2,110	2,440
Land equipment	864	1,142	1,246	1,379	1,609	1,409	1,416
Air equipment	1,945	2,179	2,486	2,880	2,680	2,753	2,580
General support	282	325	353	419	434	519	541

1. This table is based on the *Appropriation Accounts* and the *Supply Estimates*. Outturn and Estimates are given at outturn and Estimates prices respectively.
2. All Air systems package deal expenditure is included under Production.
3. Including provision of facilities and quality assurance.
4. Appropriations-in-aid arise from the sale of surplus and of goods purchased on behalf of the Defence Sales organisation.

This table covers stocks held in the individual services' major depots. The operational requirements of each service result in different proportions of their stores held in major depots and therefore the table should not be used for inter-service comparisons.

The value of stock is based on the best estimate of prices ruling at the end of each financial year.

Forms, publications and obsolete stores are excluded from the figures.

	1981-82	1982-83	1983-84	1984-85	1985-86
	£ million				
Value of stock at the year end	6,995	7,673	8,513	9,581	9,978
Royal Navy	2,855	3,091	3,728	3,897	3,998
Army	1,816	2,012	2,001	2,282	2,308
Royal Air Force	2,324	2,570	2,784	3,402	3,672
	£ million				
Value of issue transactions in year	3,093	5,818	6,163	7,342	7,521
Royal Navy [1]	1,032	3,259	3,886	4,526	4,309
Army	1,219	1,381	1,127	1,185	1,154
Royal Air Force	842	1,178	1,150	1,631	2,058
Value of receipt transactions in year	3,015	5,645	6,145	7,842	7,874
Royal Navy	1,265	3,386	3,962	4,778	4,151
Army	823	1,206	1,069	1,298	1,253
Royal Air Force	927	1,053	1,114	1,766	2,470
	Millions				
Item types in inventory at year end	2.9	2.9	3.0	3.1	3.1
Royal Navy	0.8	0.8	0.9	0.9	0.9
Army	0.8	0.8	0.8	0.8	0.8
Royal Air Force	1.2	1.3	1.3	1.4	1.4
Number of issue transactions in year	7.9	9.4	8.8	10.4	9.7
Royal Navy [1]	2.9	3.7	3.3	4.6	4.3
Army	3.1	3.6	3.4	3.7	3.2
Royal Air Force	1.9	2.1	2.0	2.1	2.2
Number of receipt transactions in year	75	74	71	72	74
Royal Navy	24	24	21	21	22
Army	11	10	10	10	10
Royal Air Force	40	40	40	41	42
	Number				
Number of depots covered	75	74	71	72	74
Royal Navy	24	24	21	21	22
Army	11	10	10	10	10
Royal Air Force	40	40	40	41	42

1 RN figures from 1984-85 reflect an increased visibility of stock following the introduction of the CRISP system

Petajoules [1]

	Financial years					1 Apr – 31 Dec	
	1981-82	1982-83	1983-84	1984-85	1985-86	1985	1986 [2]
All Fuels	136.5	154.2	150.9	139.3	130.7	91.6	99.3
Royal Navy [3]	40.8	54.6	52.2	45.1	40.3	29.8	32.8
Army	24.4	23.6	24.3	24.9	24.8	15.5	15.8
Royal Air Force	56.9	63.0	60.5	59.8	59.0	41.8	46.7
Procurement Executive	7.7	7.2	7.4	5.9	6.6	4.5	4.0
Royal Ordnance Factories [4]	6.7	5.8	6.5	3.7	–	-	-
Operational fuels	81.7	102.2	98.1	92.4	86.1	64.0	72.3
Aviation fuels	46.7	54.0	51.3	50.4	49.8	36.3	41.9
Diesel	22.9	36.7	35.9	31.8	27.8	21.3	23.3
Petroleum	3.6	3.8	3.7	3.9	3.7	2.8	2.7
Other liquid fuels	8.5	7.7	7.2	6.3	4.8	3.6	4.4
Non-Operational fuels [5]	54.8	52.0	52.7	47.1	44.6	27.5	26.9
Furnace fuel oil [6]	31.1	28.4	27.1	23.9	22.2	13.0	11.5
Other liquid fuels	0.8	0.8	0.8	0.9	0.9	0.6	0.6
Electricity	8.7	8.6	9.2	8.6	8.7	6.2	6.3
Gas	8.4	8.8	9.9	9.5	9.7	5.9	6.6
Solid fuel	5.8	5.4	5.7	4.2	3.1	1.8	1.9

£ million

Expenditure on non-operational fuels [5]					
Royal Navy [3]	..	..	..	48.2	52.0
Army	..	..	..	111.0	111.4
Royal Air Force	..	..	..	66.1	64.5
Procurement Executive	..	..	..	36.1	32.6

1. Petajoules = 10^{15} joules.
2. Provisional.
3. Royal Navy figures include the Royal Dockyards.
4. Up to January 1985, when the ROFs became a Companies Act company.
5. Non-operational energy is that energy used for domestic purposes, space heating, lighting and the operation of plant and machinery; it does not include energy used for the propulsion of vehicles, weapons, aircraft or ships.
6. Other than that used by the fleet.

	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
	£ million						
Dockyard costs charged to production[1]	403.6	494.8	514.3	558.7	537.1	457.8	442.3
Direct costs							
Labour	73.9	94.7	97.8	109.5	103.5	96.7	91.1
Material	89.1	112.6	93.3	100.8	105.1	95.8	109.1
Dockyard services	36.1	47.4	56.1	63.8	66.4	69.6	69.7
Contract services	8.9	9.8	10.7	13.9	15.8	11.2	9.7
Overhead costs							
Production overheads	76.8	94.5	95.6	108.3	103.2	96.8	93.0
Administration and general overheads	118.8	135.8	160.8	162.4	143.1	87.7	69.7
less Increase in work in progress	21.3	36.6	57.4	-48.9	-1.1	-74.0	35.2
Cost of completed work	382.3	458.2	456.9	607.6	538.2	531.8	477.5
For MOD customers	375.1	445.4	447.0	585.6	527.8	513.9	468.2
Ship construction repairs and alterations	291.3	351.3	343.7	473.9	423.2	426.8	395.8
Major refits	119.2	183.5	148.7	186.1	167.3	216.9	157.9
Restorative refits	-	-	-	-	-	13.0	31.1
Normal refits	87.9	95.0	105.0	135.0	165.2	121.0	151.2
Construction and other Shipwork	84.2	72.8	90.0	152.8	90.7	75.9	55.6
Repairs and modification of stores for stock	27.9	27.8	31.7	32.8	32.1	25.3	24.6
Manufacture of stores for stock	10.7	11.5	11.2	13.3	10.3	7.9	7.8
Plant and machinery for other establishments	3.5	1.8	2.3	7.8	5.5	11.3	3.9
Maintenance etc for other establishments	41.7	53.0	58.1	57.8	56.7	42.6	36.1
For non-MOD customers, on repayment	1.0	1.2	1.3	1.3	1.7	1.2	0.5
Plant and machinery for Dockyard use	6.2	11.6	8.6	20.7	8.7	16.7	8.8
	Number						
Major refits completed	6	8	5	5	4	3	3
Submarines	1	2	1	2	1	2	2
Destroyers	-	1	-	1	-	-	-
Frigates	3	3	3	1	2	1	-
Mine counter-measures vessels	2	2	1	1	1	-	1
Restorative refits completed	-	-	-	-	-	1	1
Frigates	-	-	-	-	-	1	1
Normal refits completed	33	30	36	49	50	42	47
Royal Navy vessels							
Aircraft carriers	-	-	1	-	-	-	-
Submarines	1	2	1	1	3	1	4
Cruisers/destroyers	1	2	1	1	-	-	-
Frigates	9	4	3	2	4	3	7
Mine counter-measures vessels	7	9	10	8	8	7	7
Patrol vessels	3	2	5	4	5	-	3
Others	10	9	7	12	9	12	7
Royal Fleet Auxiliary vessels	-	-	3	11	5	5	2
Royal Maritime Auxiliary Services vessels	2	2	5	10	16	14	17
Average number of employees	34,049	33,232	31,923	29,554	26,750	24,181	19,264
Civilian personnel	33,982	33,165	31,861	29,500	26,705	24,221	19,234
Service personnel	67	67	62	54	45	40	30

1 Costs do not necessarily correspond to cash payments from Votes during the year: for example the direct costs include notional liability for civil superannuation and the cost of material used during the year, though possibly bought in previous years. The overhead costs include provision for the depreciation of fixed assets, many of which were acquired in previous years, and notional interest on capital.

This section deals with both Service and civilian manpower. It includes staff employed at the Royal Ordnance Factories which changed from being part of MOD to independant Companies Act status on 2 January 1985. Staff employed at the factories are included in the MOD manpower counts up to and including 1 January 1985. The following definitions refer to Service personnel:

Regular Forces comprise both *UK Service personnel* and *locally entered personnel.*

UK Service personnel are normally recruited in the United Kingdom for service worldwide.

Locally entered personnel are recruited outside the United Kingdom to serve in special formations with special conditions of service. In some cases there are restrictions on the areas in which they are required to serve.

Regular Reserves consist of former members of the Regular Forces who have a liability for service in the Reserves.

Volunteer Reserves and Auxiliary Forces comprise personnel in civilian occupations who undertake to give a certain amount of their time to train in support of the Regular Forces. They also include a number of non-Regular permanent staff.

Officers designate are candidates for commissioned service who are required to complete successfully a period of training before they are appointed to commissions. Some enter direct from civil life and others are selected from the ranks. Figures shown for officers include officers designate.

The numbers shown for females comprise the Women's Services and female members of the Nursing Services. Certain professionally qualified female officers are not commissioned in the Women's Services but in the Branch or Corps appropriate to their qualifications. These officers, of whom there were 193 at 1 January 1987 serving in the medical, dental, veterinary and legal specialisations, are included in the numbers of male officers.

1 April

Thousands

	Actual						Estimates [2]	
	1982	1983	1984	1985	1986	1987 [1]	1987	1988
UK based								
Service	544.5	529.5	525.0	500.3	492.0	486.7	485.0	463.8
Civilian	327.6	320.6	325.9	326.2	322.5	320.1	320.0	315.8
	216.9	208.9	199.1	174.1	169.5	166.6	165.0	148.0
Central Staffs								
Service	..	15.9	15.4	15.5	15.2	15.2	..	..
Civilian	..	0.8	0.8	1.2	1.2	1.2	..	..
	18.8	15.1	14.6	14.4	14.0	13.9	13.9	14.0
Navy [3]								
Service	134.6	131.8	126.6	123.6	119.3	117.3	..	..
Civilian	72.6	71.2	70.8	69.6	67.1	65.6	..	..
	62.0	60.6	55.8	54.0	52.2	51.7	51.3	34.8
Army								
Service	212.1	207.4	207.9	207.4	205.9	203.7	..	..
Civilian	161.9	157.9	160.4	161.2	160.2	159.2	..	..
	50.2	49.4	47.5	46.3	45.7	44.5	44.0	43.6
Air								
Service	..	113.0	115.6	114.8	114.1	114.1	..	..
Civilian	..	89.5	92.7	93.0	92.8	93.0	..	..
	24.1	23.5	22.9	21.8	21.3	21.2	20.9	20.8
PE								
Service	..	42.8	41.4	39.0	37.5	36.5	..	..
Civilian	..	1.1	1.1	1.3	1.2	1.2	..	..
	42.4	41.7	40.3	37.7	36.3	35.3	34.9	34.8
ROF								
Civilian	19.4	18.6	18.0	*	*	*	*	*
	19.4	18.6	18.0	*	*	*	*	*
Locally entered/engaged								
Service	44.9	44.0	43.5	42.6	42.3	41.8	41.6	41.4
Civilian	10.1	10.1	10.1	10.2	10.1	9.7	9.7	9.6
	34.8	33.8	33.4	32.4	32.2	32.1	31.9	31.8

1. Latest actual figures are for 1 January.
2. Figures are those for financial costings.
3. Includes the Royal Marines.

4.2 Percentage distribution of manpower by major programme [1]

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
	Thousands						
Total MOD manpower [2]	582.9	564.9	552.2	549.4	543.0	532.2	507.9
Staff not provided for in Defence Estimates [3]							
Royal Ordnance Factories [4]	20.9	19.3	18.7	18.4	*	*	*
Department of Environment	23.3	22.1	20.7	20.7	19.8	19.2	18.9
	Percent [2]						
Total MOD manpower	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Service	58.4	59.2	60.3	61.1	61.5	62.3	64.5
Civilian	41.6	40.8	39.7	38.9	38.5	37.7	35.5
Nuclear strategic force	1.2	1.2	1.2	1.1	1.2	1.2	1.2
Service	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Civilian	0.8	0.8	0.8	0.7	0.8	0.8	0.8
Navy general purpose combat forces [5]	6.5	6.5	6.7	9.5	10.2	10.4	10.4
Service	5.2	5.3	5.5	7.9	7.9	8.0	8.1
Civilian	1.3	1.2	1.3	1.7	2.4	2.4	2.3
European theatre ground forces [6]	21.0	22.8	23.0	22.6	22.9	23.4	25.0
Service	16.7	18.4	18.7	18.4	18.6	18.8	20.0
Civilian	4.3	4.4	4.3	4.2	4.3	4.6	5.0
Other Army combat forces	3.8	3.8	3.9	4.0	4.0	4.1	4.3
Service	2.6	2.6	2.7	2.7	2.7	2.8	3.0
Civilian	1.2	1.2	1.2	1.3	1.3	1.3	1.3
Air Force general purpose forces	11.8	12.1	12.2	12.6	12.8	13.1	13.9
Service	10.1	10.4	10.5	10.8	11.1	11.4	12.1
Civilian	1.7	1.7	1.7	1.7	1.7	1.7	1.8
Reserve and Auxiliary formations [7]	1.0	1.1	1.1	1.2	1.2	1.1	1.2
Service	0.5	0.5	0.5	0.5	0.5	0.5	0.6
Civilian	0.5	0.5	0.6	0.7	0.7	0.6	0.6
Research and development	5.6	5.5	5.1	5.0	5.0	4.7	4.8
Service	0.3	0.3	0.2	0.2	0.3	0.2	0.2
Civilian	5.3	5.2	4.8	4.7	4.8	4.5	4.6
Training	17.4	15.3	15.7	15.2	15.0	14.8	14.8
Service [8]	14.0	12.0	12.5	12.1	12.0	11.9	11.8
Civilian	3.4	3.3	3.3	3.2	3.1	2.9	3.0
Equipment support and associated facilities in UK	15.3	15.0	14.6	13.7	12.6	12.1	9.2
Service	1.8	1.9	1.8	1.5	1.5	1.5	1.6
Civilian	13.5	13.1	12.7	12.2	11.1	10.6	7.6
Other support functions	16.5	16.7	16.4	15.1	15.0	15.1	15.4
Service	7.0	7.5	7.5	6.6	6.6	6.7	6.9
Civilian	9.5	9.3	8.9	8.5	8.4	8.4	8.5

1. This table presents a summary of the manpower analyses in tables 4.3 and 4.4.
2. These figures represent the average strengths provided for in the original Defence Estimates. Service figures include UK regular forces and locally entered personnel. Civilian figures include industrial and non-industrial staff plus all locally engaged staff.
3. Civilians employed on Defence work who are excluded from the Defence Estimates provisions.
4. Up to January 1985
5. Figures from 1984-85 are not fully comparable with those for earlier years.
6. For operational and security reasons, Army manpower in the South Atlantic is included in the European theatre ground forces total.
7. Regular whole-time serving personnel attached to Reserve and Auxiliary formations only.
8. Comprises administrative and training staff and the average number of trainees both at initial and higher levels, but excludes personnel on short courses, training carried out by front-line units and operational training.

4.3 Analysis of Service personnel by programme

Thousands

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Total Service manpower [1]	340.6	334.7	333.1	335.8	334.2	331.5	327.6
Nuclear strategic force	2.4	2.4	2.3	2.1	2.1	2.0	2.0
Navy general purpose combat forces [2]	30.1	29.7	30.1	43.3	42.8	42.4	41.2
Submarines	2.7	2.9	2.9	2.9	2.9	2.9	2.9
Aircraft and ASW carriers	1.5	2.1	2.5	1.7	1.7	1.7	1.7
Amphibious forces	4.8	4.1	4.4	5.5	5.4	5.3	5.3
Destroyers and frigates	13.0	13.0	12.5	13.1	13.1	13.0	12.1
Mine counter-measures vessels	1.1	1.1	1.2	1.3	1.3	1.3	1.2
Other vessels	1.7	1.6	1.8	2.1	2.0	2.0	2.0
Aircraft	2.4	2.6	2.5	3.4	3.4	3.4	3.4
Fleet headquarters	1.1	1.2	1.2	3.0	2.9	3.0	2.9
Overseas shore establishments	1.1	1.1	2.1	1.2	1.0	1.0	1.0
Naval bases and operational support	*	*	*	9.1	8.9	8.8	8.7
European theatre ground Forces [3]	97.3	104.2	103.0	101.2	101.0	100.2	101.3
British Army of the Rhine	56.8	58.8	58.8	57.3	55.9	55.0	57.3
Berlin	3.0	3.0	3.1	3.0	3.0	3.0	3.0
Home forces	37.5	42.4	41.1	40.9	42.1	42.2	41.6
Other Army combat forces	15.0	14.7	14.9	14.9	14.7	15.0	15.2
Mediterranean	4.2	4.3	4.2	4.2	4.1	4.2	4.0
Hong Kong and other Far East	9.2	9.6	9.5	9.5	9.4	9.6	9.4
Other areas [3]	1.6	0.8	1.2	1.2	1.2	1.2	1.2
Air Force general purpose forces	58.6	58.6	58.1	59.6	60.2	61.0	61.2
Air defence	4.4	4.4	4.6	5.0	5.1	5.3	5.4
Offensive support	1.1	1.2	1.2	1.3	1.2	1.3	1.2
Strike/attack/reconnaissance	5.3	4.5	4.8	5.4	5.7	5.6	5.5
Maritime aircraft	1.6	1.7	1.7	1.7	1.7	1.7	1.6
Transport aircraft	3.4	3.7	3.7	3.8	3.7	3.7	3.7
Tanker aircraft	0.5	0.5	0.6	0.7	0.7	0.7	0.6
Other aircraft	3.8	3.9	3.8	4.0	3.9	3.8	3.5
Operational stations	19.9	20.2	19.0	19.2	19.4	19.8	20.1
Headquarters	2.8	2.7	2.7	2.6	2.5	2.6	2.6
General support	15.8	15.8	16.0	15.9	16.3	16.5	17.0
Reserve and Auxiliary formations [4]	2.9	3.0	3.0	2.9	2.9	2.9	3.0
Navy	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Army	2.3	2.4	2.4	2.3	2.3	2.4	2.5
Air Force	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Research and development	1.5	1.5	1.3	1.3	1.4	1.0	1.0
Ship construction and underwater warfare	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Ordnance and other Army	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Military aircraft	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Guided weapons	0.1	0.1	-	-	0.1	0.1	0.1
Other electronics	0.1	0.1	0.1	-	-	-	-
Other research and development	0.6	0.6	0.5	0.6	0.6	0.3	0.4
Training [5]	81.5	67.8	68.9	66.3	65.0	63.2	59.7
Service colleges	4.7	4.1	4.5	4.2	4.2	4.2	4.0
Navy	24.0	22.6	21.0	14.7	14.4	14.2	14.1
Army	35.2	26.9	27.2	30.4	29.8	28.6	25.8
Air Force	17.6	14.2	16.2	17.0	16.6	16.2	15.8
Equipment support and associated facilities in UK	10.3	10.7	10.2	8.0	8.1	8.0	8.0
Royal Dockyards	0.1	0.1	0.1	-	-	-	-
Other repair and maintenance	6.9	7.2	7.2	5.0	5.0	4.9	5.2
Storage and supply	3.1	3.2	2.7	2.8	2.9	2.9	2.7
Quality assurance	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Other support functions	41.0	42.1	41.3	36.1	36.0	35.8	35.0
Whitehall organisation	2.8	2.6	2.7	2.9	3.0	3.7	3.3
Local administration communications etc in UK	19.5	20.0	18.8	15.4	15.8	15.5	15.4
Meteorological services	*	*	*	*	*	*	*
Family and personnel services in UK	6.6	6.8	6.4	5.6	5.4	5.2	5.1
Service pensions	*	*	*	*	*	*	*
Other support services	12.1	12.7	13.4	12.2	11.8	11.4	11.2

1. These figures represent the average strengths provided for in the original Defence Estimates. Service figures include UK regular forces and locally entered personnel. Civilian figures include industrial and non-industrial staff plus all locally engaged staff.
2. The attribution of Naval manpower was changed in 1983-84, thus figures from 1984-85 are not fully comparable with those for earlier years.

Thousands

1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	
242.3	230.2	219.1	213.6	208.8	200.7	188.5	Total civilian and service manpower [3]
4.4	4.5	4.3	3.8	4.3	4.0	4.1	Nuclear strategic forces
7.7	6.9	7.1	9.1	12.8	12.8	11.5	Navy general purpose combat forces [3]
*	*	*	*	*	*	*	Submarines
*	*	*	*	*	*	*	Aircraft and ASW carriers
-	-	-	0.1	0.1	0.1	0.1	Amphibious forces
*	*	*	*	*	*	*	Destroyers and frigates
*	*	*	*	*	*	*	Mine counter-measure vessels
5.1	4.9	5.2	5.0	5.0	5.0	4.4	Other vessels
0.1	0.1	-	-	-	-	-	Aircraft
0.2	0.2	0.2	1.8	1.8	1.8	1.5	Fleet headquarters
2.3	1.7	1.7	1.2	1.1	1.0	0.9	Overseas shore establishments
*	*	*	1.0	4.8	4.9	4.5	Naval bases and operation support
25.2	24.6	23.8	23.2	23.4	24.3	25.6	European theatre ground forces
25.2	24.6	23.8	23.2	23.4	24.3	23.7	British Army of the Rhine
*	*	*	*	*	*	0.1	Berlin
*	*	*	*	*	*	1.7	Home Forces [6]
6.9	6.9	6.9	7.0	6.9	6.9	6.9	Other Army combat forces
2.7	2.8	2.8	2.7	2.7	2.7	2.5	Mediterranean
4.0	4.1	4.0	4.1	4.0	4.0	3.7	Hong Kong and other Far East
0.2	-	0.1	0.2	0.2	0.2	0.2	Other areas
10.2	9.8	9.3	9.4	9.2	8.9	9.2	Air force general purpose forces
0.1	0.1	0.1	0.1	0.1	0.1	0.1	Air defence
*	*	*	*	*	*	*	Offensive support
*	*	*	*	*	*	*	Strike/attack/reconnaissance
*	*	*	*	*	*	*	Maritime aircraft
*	*	*	*	*	*	*	Transport aircraft
*	*	*	*	*	*	*	Tanker aircraft
0.3	0.3	0.3	0.2	0.1	0.1	0.3	Other aircraft
4.6	4.5	4.3	4.4	4.5	4.3	3.9	Operational stations
0.9	0.7	0.6	0.5	0.5	0.5	0.6	Headquarters
4.3	4.2	4.0	4.2	4.0	3.9	4.3	General support
3.2	3.0	3.3	3.6	3.6	2.9	3.0	Reserve and Auxiliary formations
0.2	0.2	0.2	0.5	0.5	0.2	0.2	Navy
2.5	2.3	2.6	2.6	2.6	2.3	2.3	Army
0.5	0.5	0.5	0.5	0.5	0.4	0.5	Air Force
31.0	29.5	26.7	25.9	25.9	24.0	23.6	Research and development
3.5	3.3	3.6	4.4	4.4	3.9	3.8	Ship construction and underwater warfare
3.7	3.6	3.9	3.1	3.2	3.0	2.9	Ordnance and other Army
7.5	7.2	6.0	5.9	5.5	4.8	4.7	Military aircraft
2.6	2.4	2.1	2.3	2.3	2.0	1.9	Guided weapons
3.7	3.5	2.2	1.4	1.4	1.4	1.3	Other electronics
10.0	9.5	8.9	8.8	9.1	8.9	8.9	Other research and development
19.7	18.6	18.0	17.4	16.6	15.6	15.5	Training
3.0	2.8	2.7	2.3	2.3	2.1	2.1	Service colleges
3.6	3.4	3.0	2.5	2.2	2.0	2.0	Navy
10.4	9.9	9.7	10.4	9.9	9.3	9.3	Army
2.7	2.5	2.6	2.2	2.2	2.2	2.1	Air Force
78.9	73.9	70.4	67.2	60.3	56.6	38.5	Equipment support and associated facilities [6] in UK
31.0	28.8	25.6	23.5	18.5	18.6	0.6	Royal Dockyards
15.1	14.2	14.1	14.6	14.9	13.6	14.4	Other repair and maintenance
24.7	23.2	23.0	21.7	21.2	19.3	19.3	Storage and supply
8.1	7.7	7.7	7.4	5.7	5.1	4.2	Quality assurance
55.1	52.5	49.3	46.9	45.8	44.7	45.1	Other support functions
11.1	10.4	10.1	8.0	7.8	7.8	7.6	Whitehall organisation
27.1	26.1	28.0	28.8	28.3	27.7	28.6	Local administration communications, etc, in UK [6]
2.9	2.8	2.7	2.7	2.7	2.6	3.4	Meteorological services
9.3	8.6	7.2	6.1	5.9	5.4	5.5	Family and personnel services in UK
0.2	0.2	-	-	-	-	-	Service pensions
4.5	4.4	1.3	1.3	1.1	1.2	1.1	Other support services

3. For operational and security reasons, Army manpower in the South Atlantic is included in the European theatre ground forces total.
4. Regular whole-time serving personnel attached to Reserve and Auxiliary formations only.
5. Comprises administrative and training staff and the average number of trainees both at initial and higher levels, but excludes personnel on short courses, training carried out by front-line units and operational training.
6. Reallocation of numbers.

1 April

Thousands

	Actual					Estimates[3]	
	1982	1983	1984	1985	1986	1987	1988
All Services	327.6	320.6	325.9	326.2	322.5	320.0	315.8
Male	311.9	305.2	309.7	309.8	306.5	303.9	299.7
Officers	40.9	40.3	40.1	40.3	40.4	40.7	40.8
Servicemen	271.0	264.9	269.6	269.5	266.1	263.3	258.9
Female	15.7	15.4	16.2	16.4	16.0	16.0	16.1
Officers	2.2	2.1	2.1	2.2	2.2	2.3	2.3
Servicewomen	13.5	13.3	14.1	14.2	13.8	13.7	13.8
Royal Navy	65.1	64.0	63.7	62.8	60.3	59.2	58.3
Male	61.1	60.1	59.8	59.1	56.8	55.9	54.9
Officers	9.3	9.1	8.8	8.9	9.0	9.1	9.2
Servicemen	51.8	51.0	51.0	50.1	47.8	46.8	45.8
Female	4.0	3.9	3.9	3.7	3.4	3.3	3.3
Officers	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Servicewomen	3.5	3.5	3.5	3.3	3.1	2.9	2.9
Royal Marines	7.9	7.8	7.6	7.6	7.6	7.8	7.8
Male	7.9	7.8	7.6	7.6	7.6	7.8	7.8
Officers	0.7	0.6	0.6	0.6	0.6	0.7	0.7
Servicemen	7.2	7.1	7.0	7.0	7.0	7.1	7.1
Army	163.2	159.1	161.5	162.4	161.4	159.5	156.3
Male	157.2	152.9	155.0	155.6	154.8	153.1	150.0
Officers	16.5	16.3	16.2	16.3	16.3	16.3	16.3
Servicemen	140.7	136.6	138.7	139.3	138.6	136.8	133.7
Female	6.0	6.1	6.6	6.8	6.6	6.4	6.4
Officers	1.0	0.9	1.0	1.0	1.0	1.0	1.0
Servicewomen	5.0	5.2	5.6	5.8	5.6	5.4	5.4
Royal Air Force	91.5	89.8	93.1	93.4	93.2	93.5	93.4
Male	85.7	84.5	87.3	87.5	87.2	87.2	87.0
Officers	14.5	14.2	14.4	14.5	14.5	14.6	14.7
Servicemen	71.2	70.2	73.0	73.0	72.7	72.6	72.3
Female	5.8	5.4	5.7	6.0	6.0	6.3	6.4
Officers	0.8	0.7	0.8	0.8	0.9	0.9	0.9
Servicewomen	5.0	4.6	5.0	5.1	5.2	5.4	5.5

1. Includes personnel undergoing initial training.

2. Actual figures for the current year are as at 1 January.

3. Figures are those used for the financial costings.

4.6 Strengths of trained UK Regular Forces[1]

1 April — Thousands

	Actual						Estimates[3]	
	1982	1983	1984	1985	1986	1987[2]	1987	1988
All Services	304.5	298.0	296.9	297.2	293.8	292.3	293.2	289.4
Male	289.4	283.6	282.0	282.0	278.9	277.5	278.2	274.5
Officers	36.6	36.2	35.7	35.7	35.7	35.8	35.7	35.7
Servicemen	252.7	247.4	246.3	246.2	243.1	241.6	242.5	238.8
Female	15.2	14.4	14.9	15.3	14.9	14.8	14.9	14.8
Officers	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1
Servicewomen	13.1	12.4	12.9	13.2	12.9	12.7	12.9	12.7
Royal Navy	59.9	58.6	58.2	57.2	54.7	52.8	53.6	52.9
Male	56.1	55.0	54.5	53.7	51.4	49.7	50.5	49.9
Officers	7.7	7.6	7.5	7.5	7.4	7.4	7.4	7.5
Servicemen	48.4	47.3	47.0	46.2	44.0	42.3	43.0	42.5
Female	3.8	3.6	3.7	3.6	3.3	3.1	3.1	3.0
Officers	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.4
Servicewomen	3.4	3.1	3.3	3.2	2.9	2.7	2.8	2.7
Royal Marines	7.4	7.3	7.2	7.0	6.9	6.9	6.9	7.1
Male	7.4	7.3	7.2	7.0	6.9	6.9	6.9	7.1
Officers	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.6
Servicemen	6.8	6.7	6.7	6.4	6.3	6.4	6.4	6.5
Army	150.8	147.7	145.4	145.9	145.3	145.3	144.5	141.9
Male	145.0	142.1	139.5	139.7	139.2	139.3	138.6	136.1
Officers	15.6	15.4	15.1	15.1	15.1	15.2	15.0	15.0
Servicemen	129.4	126.7	124.4	124.6	124.2	124.1	123.6	121.1
Female	5.8	5.6	5.9	6.2	6.1	5.9	5.9	5.8
Officers	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.9
Servicewomen	4.8	4.7	5.0	5.2	5.1	5.0	5.0	4.9
Royal Air Force	86.5	84.5	86.1	87.1	86.9	87.2	88.2	87.4
Male	80.9	79.3	80.7	81.6	81.4	81.5	82.3	81.4
Officers	12.8	12.6	12.6	12.6	12.7	12.7	12.7	12.7
Servicemen	68.2	66.7	68.2	69.0	68.7	68.8	69.5	68.7
Female	5.6	5.2	5.4	5.5	5.6	5.8	5.9	6.0
Officers	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Servicewomen	4.9	4.5	4.7	4.8	4.9	5.0	5.1	5.2

1. Shows personnel who have completed initial training.

2. Latest actual figures are for 1 January.

3. Figures are those used for the financial costings.

4.7 Strengths of the Reserves and Auxiliary Forces[1]

1 April — Thousands

	1981	1982	1983	1984	1985	1986	1987[2]
All Services							
Regular Reserves	196.5	196.4	193.4	198.0	205.5	211.4	217.9
Male	195.1	195.0	192.0	196.5	204.0	209.9	216.1
Female	1.4	1.4	1.4	1.5	1.5	1.6	1.8
Volunteer Reserves and Auxiliary Forces	84.0	86.3	87.5	85.9	88.6	95.4	95.7
Male	76.6	78.6	79.7	78.0	80.1	85.9	85.9
Female	7.4	7.7	7.8	7.9	8.5	9.4	9.8
Royal Navy							
Regular Reserves:							
Male	26.6	24.6	23.7	23.3	23.1	23.9	24.1
Female	0.1	0.1	0.2	0.2	0.3	0.3	0.3
Volunteer Reserves and Auxiliary Forces:							
Male	4.3	4.3	4.2	4.1	4.0	4.2	4.2
Female	1.1	1.1	1.1	1.1	1.2	1.3	1.3
Royal Marines							
Regular Reserves:							
Male	2.2	2.2	2.2	2.2	2.2	2.3	2.3
Volunteer Reserves and Auxiliary Forces							
Male	0.9	1.0	1.1	1.0	1.1	1.2	1.1
Army							
Regular Reserves:							
Male	136.7	139.4	137.5	142.4	149.3	152.9	157.8
Female	0.7	0.7	0.7	0.8	0.8	0.8	1.0
Territorial Army:							
Male	64.1	66.3	67.0	65.5	67.2	70.6	70.4
Female	5.5	5.8	5.8	5.9	6.5	7.1	7.5
Ulster Defence Regiment							
Male	6.7	6.5	6.4	6.0	5.7	5.8	5.8
Female	0.7	0.7	0.7	0.7	0.7	0.7	0.8
Home Service Force:							
Male	*	*	0.3	0.3	0.9	3.0	3.3
Royal Air Force							
Regular Reserves:							
Male	29.6	28.8	28.5	28.5	29.4	30.7	32.0
Female	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volunteer Reserves and Auxiliary Forces:							
Male	0.6	0.5	0.7	0.9	1.1	1.1	1.1
Female	0.1	0.1	0.1	0.1	0.1	0.2	0.2

1. Includes the Ulster Defence Regiment (UDR) and the Home Service Force (HSF). Detailed numbers of full-time and part-time members of the UDR are given in Table 6.1. Recruitment to the HSF began in September 1982.

2. Figures for the current year are for 1 January.

4.8 Strengths of locally entered personnel[1]

1 April

Number

		1981	1982	1983	1984	1985	1986	1987[2]
MOD		45,033	44,876	43,957	43,470	42,626	42,343	41,825
Services		9,730	10,081	10,112	10,109	10,206	10,101	9,686
Civilians		35,303	34,795	33,845	33,361	32,420	32,242	32,139
UK								
Army		903	1,190	1,194	1,242	1,122	1,312	1,325
Continental Europe								
FRG	Civilians	24,312	23,851	23,251	22,876	22,667	22,656	22,659
Elsewhere	Civilians	767	746	747	805	809	822	921
Mediterranean								
Gibraltar	Army	42	43	44	48	49	49	53
	Civilians	2,662	2,600	2,524	2,418	1,699	1,661	1,596
Malta	Civilians	13	11	12	12	12	12	12
Cyprus	Civilians	2,748	2,712	2,637	2,645	2,611	2,557	2,512
Far East								
Hong Kong	Royal Navy	348	346	357	374	378	388	396
	Army	6,245	6,356	6,250	6,436	6,552	6,275	5,681
	Civilians	3,066	3,137	3,159	3,144	3,143	3,047	3,013
Brunei	Army	866	788	760	818	841	843	768
	Civilians	193	191	197	206	215	203	196
Nepal	Army	1,326	1,358	1,507	1,191	1,264	1,234	1,463
Elsewhere	Civilians	579	579	611	614	629	600	671
Other Areas	Civilians	963	968	707	641	635	684	559

1. Locally entered personnel are shown by country of deployment which may not be country or origin.

2. Latest year figures are for 1 January.

4.9 Strengths of Cadet Forces[1]

1 April

Thousands

	1981	1982	1983	1984	1985	1986	1987[2]
All Services	150.6	148.7	149.0	146.5	144.7	143.4	144.3
Male	147.1	145.1	144.1	139.4	135.4	132.5	132.7
Female	3.5	3.6	4.9	7.1	9.2	10.9	11.5
Royal Navy cadets[3]	31.1	28.7	29.4	28.4	28.4	28.0	28.0
Male	28.5	26.4	27.1	25.2	24.7	24.0	24.0
Female	2.5	2.2	2.4	3.2	3.7	4.0	4.0
Army cadets	75.1	74.1	74.5	73.8	72.1	70.9	70.9
Male	74.5	73.2	73.4	72.1	69.8	68.2	68.2
Female	0.7	0.9	1.1	1.7	2.3	2.7	2.7
Royal Air Force cadets	44.4	45.9	45.1	44.3	44.1	44.5	45.4
Male	44.1	45.6	43.6	42.5	40.9	40.3	40.5
Female	0.3	0.4	1.5	1.8	3.2	4.2	4.8

1. Includes the appropriate Service component of the Combined Cadet Force but excludes officers and training and administrative staff.

2. Latest year figures are for 1 January.

3. All figures now include Portsmouth Area Volunteer Cadet Corps and Sea Scouts.

4.10 Strengths of civilian staff employed in the Ministry of Defence: by type

1 April — Thousands

	Actual						Estimates[2]	
	1982	1983	1984	1985	1986	1987[1]	1987	1988
MOD civilian staff	251.7	242.7	232.5	206.5	201.7	198.8	196.9	179.8
Non-industrial	116.8	116.1	113.7	105.2	104.1	104.0	104.4	102.4
Industrial	132.9	126.6	118.8	101.3	97.6	94.8	92.5	77.4
UK based[3]	216.9	208.9	199.1	174.1	169.5	166.6	165.0	148.0
Non-industrial	108.1	105.6	103.3	94.9	93.8	93.7	94.2	92.2
Industrial	108.8	103.3	95.8	79.1	75.6	72.9	70.8	55.8
United Kingdom (excluding Royal Ordnance Factories)	191.6	184.7	175.7	168.6	164.1	161.3	159.6	142.4
Non-industrial	98.2	96.3	93.9	90.8	89.8	89.7	90.2	88.1
Industrial	93.6	88.5	81.8	77.8	74.3	71.6	69.4	54.2
Royal Ordnance Factories	19.4	18.5	18.0	•	•	•	•	•
Non-industrial	5.4	5.1	5.3	•	•	•	•	•
Industrial	14.0	13.4	12.7	•	•	•	•	•
Overseas	5.7	5.6	5.4	5.5	5.3	5.3	5.4	5.6
Non-industrial	4.5	4.2	4.1	4.1	4.0	4.0	4.0	4.0
Industrial	1.2	1.4	1.3	1.3	1.3	1.3	1.4	1.6
Locally engaged:	34.8	33.8	33.4	32.4	32.2	32.1	31.9	31.8
Non-industrial	10.7	10.6	10.4	10.2	10.3	10.3	10.2	10.2
Industrial	24.1	23.3	23.0	22.2	22.0	21.9	21.8	21.6

1. Actual figures for the latest year are as 1 January.
2. Figures are those used for the financial costings.
3. UK based personnel are those recruited in the UK even though in some instances they may be serving overseas. Locally engaged staff are those recruited overseas.

4.11 Strengths of occupational groups[1]

1 April — Thousands

	1981	1982	1983	1984	1985	1986	1987[2]
All groups	113.5	108.1	105.6	103.3	94.9	93.8	93.7
Open structure and executive[3]	11.0	10.6	10.3	11.3	10.7	13.0	13.3
Administrative[4] (formerly clerical)	26.0	26.4	26.0	25.2	23.5	23.2	24.2
Secretarial	6.2	5.8	5.7	6.5	5.2	5.2	5.2
Supervisory	4.6	4.4	4.3	4.2	3.6	3.6	3.4
Professional and technological	25.5	23.9	23.4	22.7	19.5	18.3	17.8
Science	10.0	9.7	9.6	8.9	7.8	6.4	6.4
Cartographic and hydrographic	1.1	1.1	1.0	1.0	1.0	1.0	1.0
Retired officers	1.9	1.9	1.8	1.8	1.8	1.8	1.7
Police	3.6	3.7	3.6	3.6	3.4	3.7	3.9
Education	2.3	2.2	2.1	2.0	2.0	1.9	1.8
Medical and nursing	0.9	0.9	0.8	0.8	0.7	0.7	0.7
Others	18.2	17.6	17.0	16.2	15.7	15.2	14.3

1. This table covers all UK based non-industrial staff employed within the Ministry of Defence, including, until 1984, those working at the Royal Ordnance Factories.
2. Figures for the latest year are as at 1 January.
3. The open structure was extended in 1984 to Senior Principal and equivalent grades and in 1986 to Principal and equivalent grades thus drawing in staff who were formerly included in the professional, technical, science and other occupational groups.
4. A new administrative group was created from 1 January 1987 covering the former clerical group together with data processing grades who were formerly included in the 'Others' group

145

4.12 Civilian apprentices:[1] type of establishment

1 April — Number

	1981	1982	1983	1984	1985	1986	1987[2]
All apprentices	7,850	7,318	6,274	5,297	4,032	4,069	4,085
Royal Dockyards[3]	3,390	2,924	2,157	1,787	1,544	1,578	1,575
Stores and maintenance establishments:							
Navy	341	377	330	285	287	279	329
Army	729	669	581	417	384	381	375
Air Force	236	260	234	227	191	184	211
Research and development establishments	1,512	1,355	1,225	1,085	1,087	1,041	1,002
Royal Ordnance Factories	1,051	1,068	947	823	*	*	*
Other establishments	591	665	800	673	539	606	593

1. Includes female apprentices.
2. Figures for the latest year are as 1 January.
3. Includes the Clyde submarine base.

4.13 Civilian apprentices:[1] location

1 April — Number

		1981	1982	1983	1984	1985	1986	1987[2]
United Kingdom	Total	7,850	7,318	6,274	5,297	4,032	4,069	4,085
	ROFs	1,051	1,068	947	823	*	*	*
	Others	6,799	6,250	5,327	4,474	4,032	4,069	4,085
England	Total	6,490	5,873	4,972	4,058	2,852	2,871	2,840
	ROFs	938	948	835	727	**	*	*
	Others	5,552	4,925	4,137	3,331	2,852	2,871	2,840
Wales	Total	411	376	377	353	267	273	290
	ROFs	55	57	55	48	*	*	*
	Others	356	319	322	305	267	273	290
Scotland	Total	919	1,037	897	860	892	912	944
	ROFs	58	63	57	48	*	*	*
	Others	861	974	840	812	892	912	944
Northern Ireland	Total	30	32	28	26	21	13	11
Standard Regions of England								
North	Total	75	89	54	43	7	3	3
	ROFs	51	51	41	35	*	*	*
Yorks and Humberside	Total	351	254	283	220	39	37	32
	ROFs	195	196	165	148	*	*	*
East Midlands	Total	370	351	294	237	107	89	78
	ROFs	165	161	134	115	*	*	*
South East	Total	3,392	2,596	2,218	1,693	1,364	1,419	1,442
	ROFs	117	128	123	108	*	*	*
South West	Total	1,694	1,904	1,565	1,388	1,178	1,166	1,139
	ROFs	39	39	30	26	*	*	*
West Midlands	Total	206	246	196	166	141	141	130
North West	Total	402	433	362	311	16	16	16
	ROFs	371	373	342	295	*	*	*

1. Includes female apprentices.
2. Figures for the latest year are as at 1 January.

4.14 Deployment of manpower: United Kingdom [1]

1 July

Thousands

	1980	1981	1982	1983	1984	1985	1986
United Kingdom	469.3	465.9	423.2	429.8	422.6	397.2	391.6
Services	238.1	245.0	215.2	228.9	230.4	229.6	228.3
Civilian	231.2	220.9	208.0	200.9	192.2	167.7	163.3
National totals [2]							
England	396.7	394.8	371.6	363.8	355.2	333.7	328.2
Services	200.0	207.7	195.9	195.1	194.5	193.3	191.7
Civilian	196.6	187.1	175.7	168.7	160.7	140.4	136.5
Wales	16.4	15.7	15.1	14.9	14.6	12.8	12.5
Services	6.9	6.3	6.1	6.1	6.2	6.3	6.3
Civilian	9.5	9.4	9.0	8.8	8.4	6.5	6.2
Scotland	40.0	40.2	39.5	39.3	40.9	38.2	37.6
Services	18.1	18.9	19.0	18.7	20.6	20.1	19.7
Civilian	21.9	21.3	20.5	20.6	20.3	18.1	17.9
Northern Ireland [3]	15.1	14.7	13.8	13.0	12.7	12.4	13.2
Services	11.9	11.6	10.9	10.2	10.0	9.7	10.5
Civilian	3.2	3.1	2.9	2.8	2.7	2.7	2.7
Standard regions of England							
North	7.5	7.2	7.3	7.0	6.9	5.9	5.4
Services	1.2	1.2	1.7	1.5	1.7	2.3	1.9
Civilian	6.3	6.0	5.6	5.5	5.2	3.6	3.5
Yorkshire and Humberside	23.9	22.6	22.1	23.5	23.1	21.1	21.1
Services	14.6	13.6	13.5	14.9	14.8	14.8	14.8
Civilian	9.3	9.0	8.6	8.6	8.3	6.3	6.3
East Midlands	23.0	22.6	19.6	19.3	19.0	17.6	18.1
Services	13.9	14.4	12.7	12.9	13.0	12.9	13.6
Civilian	9.1	8.2	6.9	6.4	6.0	4.7	4.5
East Anglia	16.6	18.1	18.1	18.1	18.5	19.9	19.0
Services	13.8	15.6	15.7	15.6	15.9	16.3	16.3
Civilian	2.8	2.5	2.4	2.5	2.6	2.6	2.7
South East	189.4	188.3	173.9	166.7	158.5	153.9	149.5
Services	94.8	97.9	90.2	89.0	86.7	87.3	84.6
Civilian	94.6	90.4	83.7	77.7	71.8	66.6	64.9
South West	100.9	101.7	98.8	98.4	96.7	92.1	91.4
Services	50.0	53.2	51.9	51.5	50.7	48.1	49.0
Civilian	50.9	48.5	46.9	46.9	46.0	44.0	42.4
West Midlands	20.7	20.4	19.2	18.4	19.3	18.9	18.7
Services	9.7	9.7	8.7	8.1	9.5	9.4	9.4
Civilian	11.0	10.7	10.5	10.3	9.8	9.5	9.3
North West	14.7	14.0	12.5	12.4	13.2	5.3	5.3
Services	2.0	2.2	1.4	1.5	2.1	2.2	2.2
Civilian	12.7	11.8	11.1	10.9	11.1	3.1	3.1

1. This table identifies the deployment of UK Service personnel and MOD civilians. It includes Royal Navy and Royal Marines personnel on board ships in home waters. It also includes staff in Royal Ordnance Factories up to 1984.

2. The source from which these totals are compiled for the Services is different from that used to obtain the United Kingdom element of global deployments. Consequently, the sum of the national figures can differ from the United Kingdom figures.

3. The figures for Northern Ireland include all personnel from other parts of the United Kingdom and from the British Army of the Rhine who are serving on emergency tours of duty, but exclude the Ulster Defence Regiment.

146

4.15 Deployment of UK Service and Civilian personnel: overseas

1 April

Number

	1980	1981	1982	1983	1984	1985	1986
All overseas areas [1]							
Royal Navy and Royal Marines	5,855	7,203	9,564	7,826	7,698	5,321	5,388
Army [2]	67,493	71,169	72,817	73,595	70,140	70,641	69,212
Royal Air Force	14,211	14,787	15,000	16,365	17,366	17,202	16,978
Civilians	6,220	5,948	5,708	5,613	5,437	5,455	5,379
Federal Republic of Germany							
Royal Navy and Royal Marines	39	37	38	19	256	18	6
Army [2]	54,956	58,928	60,044	57,358	55,163	55,997	56,222
Royal Air Force	9,718	10,244	10,411	10,047	10,186	10,571	10,690
Civilians	2,191	2,093	2,044	1,913	1,849	1,876	1,827
Elsewhere in Continental Europe [3]							
Royal Navy and Royal Marines	374	382	384	360	838	867	514
Army	3,826	3,977	4,126	3,931	3,909	3,853	3,877
Royal Air Force	1,647	1,692	1,727	1,740	1,803	1,623	1,591
Civilians	92	70	73	101	101	101	98
Gibraltar							
Royal Navy and Royal Marines	643	728	679	752	816	733	766
Army	776	770	832	808	815	771	744
Royal Air Force	404	412	421	431	465	455	405
Civilians	299	275	251	233	186	109	104
Cyprus							
Royal Navy and Royal Marines	17	15	16	16	20	19	16
Army	3,253	3,190	3,377	3,404	3,307	3,177	3,317
Royal Air Force	1,325	1,381	1,383	1,412	1,626	1,539	1,610
Civilians	370	368	357	342	323	293	284
Elsewhere in Mediterranean, Near East and Gulf							
Royal Navy and Royal Marines	2,936	4,338	6,021	907	2,185	552	546
Army	232	233	252	233	233	238	232
Royal Air Force	76	89	84	106	114	104	126
Civilians	11	9	9	11	9	11	7
Hong Kong							
Royal Navy and Royal Marines	326	334	311	292	275	272	275
Army	2,389	1,985	1,969	1,917	1,962	1,964	1,842
Royal Air Force	251	248	249	264	268	268	269
Civilians	383	386	400	291	272	298	288
Elsewhere in Far East							
Royal Navy and Royal Marines	56	58	61	57	58	114	334
Army	199	201	218	229	235	235	222
Royal Air Force	20	18	21	17	13	9	7
Civilians	27	22	22	21	22	15	20
Other locations							
Royal Navy and Royal Marines	1,464	1,311	2,054	5,423	3,250	2,746	2,931
Army	1,862	1,885	1,999	5,715	4,516	4,406	2,756
Royal Air Force	770	703	704	2,348	2,891	2,633	2,280
Civilians	2,847	2,725	2,552	2,701	2,675	2,752	2,751

1. The figures include service personnel who are on loan to countries in the areas shown. The Royal Navy, Royal Marine and civilian figures include personnel who are at sea in each area at the situation date. All Defence Attaches and Advisers and their staffs are included under 'Other locations' and not identified within specific areas.

2. Personnel serving in Northern Ireland on emergency tours of duty but remaining under the command of the Commander-in-Chief, British Army of the Rhine, are included in these numbers. Personnel serving on emergency tours of duty in other overseas areas are included in the numbers for that area.

3. These figures include personnel stationed in Berlin and Sardinia.

4.16 Recruitment of UK Service personnel: by Service

Number

	Financial years					1 Apr – 31 Dec	
	1981-82	1982-83	1983-84	1984-85	1985-86	1985	1986
All Services	22,607	21,647	36,991	34,721	32,651	23,860	25,197
Male	21,188	19,342	33,760	32,076	30,407	22,274	23,026
Officers	2,319	2,136	2,544	2,716	2,799	1,948	2,075
Servicemen	18,869	17,206	31,216	29,360	27,608	20,326	20,951
Female	1,419	2,305	3,231	2,645	2,244	1,586	2,171
Officers	282	232	305	300	327	228	246
Servicewomen	1,137	2,073	2,926	2,345	1,917	1,358	1,925
Royal Navy	3,805	3,584	4,785	4,582	4,276	2,759	3,494
Male	3,353	3,078	4,223	4,231	3,987	2,567	3,138
Officers	400	395	445	537	568	422	394
Servicemen	2,953	2,683	3,778	3,694	3,419	2,145	2,744
Female	452	506	562	351	289	192	356
Officers	18	13	8	14	32	23	25
Servicewomen	434	493	554	337	257	169	331
Royal Marines	699	447	447	954	1,093	806	880
Male	699	447	447	954	1,093	806	880
Officers	52	28	33	43	65	65	62
Servicemen	647	419	414	911	1,028	741	818
Army	14,204	13,071	22,348	22,278	20,268	15,386	15,204
Male	13,603	11,679	20,811	20,914	19,173	14,567	14,278
Officers	1,198	1,157	1,295	1,435	1,374	955	940
Servicemen	12,405	10,522	19,516	19,479	17,799	13,612	13,338
Female	601	1,392	1,537	1,364	1,095	819	926
Officers	148	132	173	160	151	116	93
Servicewomen	453	1,260	1,364	1,204	944	703	833
Royal Air Force	3,899	4,545	9,411	6,907	7,014	4,909	5,619
Male	3,533	4,138	8,279	5,977	6,154	4,334	4,730
Officers	669	556	771	701	792	506	679
Servicemen	2,864	3,582	7,508	5,276	5,362	3,828	4,051
Female	366	407	1,132	930	860	575	889
Officers	116	87	124	126	144	89	128
Servicewomen	250	320	1,008	804	716	486	761

Definitions for Table 4.17

Pre-cadets are Army officer candidates who undertake a short period of service as soldiers prior to appearing before the Army's officer selection board.

Officer cadets are entrants who have been selected to serve as officers but who are required to complete successfully a period of training prior to being commissioned.

University cadets are students at universities and comparable educational establishments who have been appointed as midshipmen in the Royal Navy, as acting second lieutenants in the Royal Marines or as officers in the Army and Royal Air Force and who, on graduation, will take up whole-time duty.

147

4.17 Recruitment of UK male Service personnel: by category

Number

	Financial years					1 Apr – 31 Dec	
	1981-82	1982-83	1983-84	1984-85	1985-86	1985	1986
All Services	21,188	19,342	33,760	32,076	30,407	22,274	23,026
Officers	2,319	2,136	2,544	2,716	2,799	1,948	2,075
[1] Pre-cadets	594	553	577	689	699	494	475
Officer Cadets	758	702	875	879	871	550	622
University cadets	216	168	241	235	273	243	242
Specialists, graduates and other entrants	751	713	851	913	956	661	736
Servicemen	18,869	17,206	31,216	29,360	27,608	20,326	20,951
Adults [1]	7,256	9,120	19,056	16,307	15,268	10,771	11,265
Apprentices	2,456	2,354	2,370	2,536	2,247	1,782	1,618
Young Soldiers/Airmen, Juniors [2]	9,157	5,732	9,790	10,517	10,093	7,773	8,068
Royal Navy	3,353	3,078	4,223	4,231	3,987	2,567	3,138
Officers	400	395	445	537	568	422	394
Officer cadets	235	261	242	290	306	223	193
University cadets	43	24	45	47	71	63	50
Specialists, graduates and other entrants	122	110	158	200	191	136	151
Servicemen	2,953	2,683	3,778	3,694	3,419	2,145	2,744
Adults [1]	991	1,187	1,570	1,469	1,505	832	1,163
Apprentices	509	536	542	570	495	326	276
Juniors [2]	1,453	960	1,666	1,655	1,419	987	1,305
Royal Marines	699	447	447	954	1,093	806	880
Officers	52	28	33	43	65	65	62
Officer cadets	39	17	24	24	35	35	34
University cadets	3	1	3	6	3	3	5
Specialists, graduates and other entrants	10	10	6	13	27	27	23
Servicemen	647	419	414	911	1,028	741	818
Adults [1]	371	247	263	590	631	422	524
Juniors [2]	276	172	151	321	397	319	294
Army	13,603	11,679	20,811	20,914	19,173	14,567	14,278
Officers	1,198	1,157	1,295	1,435	1,374	955	940
Pre-cadets	594	553	577	689	699	494	475
Officer cadets	226	206	266	267	204	130	132
University cadets	60	76	90	79	87	76	87
Specialists, graduates and other entrants	318	322	362	400	384	255	246
Servicemen	12,405	10,522	19,516	19,479	17,799	13,612	13,338
Adults [1]	3,876	4,959	11,478	10,246	8,979	6,505	6,348
Young Soldiers [2]	340	142	1,146	1,817	1,395	1,016	991
Apprentices	1,625	1,580	1,564	1,703	1,488	1,312	1,198
Juniors [2]	6,564	3,841	5,328	5,713	5,937	4,779	4,801
Royal Air Force	3,533	4,138	8,279	5,977	6,154	4,334	4,730
Officers	669	556	771	701	792	506	679
Officer cadets	258	218	343	298	326	162	263
University cadets	110	67	103	103	112	101	100
Specialists, graduates and other entrants	301	271	325	300	354	243	316
Servicemen	2,864	3,582	7,508	5,276	5,362	3,828	4,051
Adults [1]	2,018	2,727	5,745	4,002	4,153	3,012	3,230
Young Airmen [2]	524	617	1,499	1,011	945	672	677
Apprentices	322	238	264	263	264	144	144

1. Entrants over the age of 17½, but excluding RN and RAF apprentices. (In the Army all apprentices are below the age of 17½ on entry).

2. Young soldiers are entrants between the ages of 17 and 17½; Army juniors are entrants below the age of 17; young airmen and RN, RM juniors are entrants below the age of 17½ (excluding apprentices in all cases).

4.18 Outflow of UK Service personnel: by Service [1]

Number

	Financial years					1 Apr - 31 Dec	
	1981-82	1982-83	1983-84	1984-85	1985-86	1985	1986
All Services	29,451	28,657	31,926	34,554	36,521	26,773	27,809
Male	26,799	26,108	29,468	32,095	33,881	24,756	25,705
Officers	2,833	3,214	3,372	3,194	3,388	2,596	2,515
Servicemen	23,966	22,894	29,096	28,901	30,493	22,160	23,190
Female	2,652	2,549	2,458	2,459	2,640	2,017	2,104
Officers	311	324	304	298	351	279	243
Servicewomen	2,341	2,225	2,154	2,161	2,289	1,738	1,861
Royal Navy	5,708	4,617	5,095	5,572	6,915	5,031	5,104
Male	5,131	4,085	4,514	5,011	6,356	4,589	4,648
Officers	634	750	796	567	648	462	455
Servicemen	4,497	3,335	3,718	4,444	5,708	4,127	4,193
Female	577	532	581	561	559	442	456
Officers	56	59	73	49	55	45	40
Servicewomen	521	473	508	512	504	397	416
Royal Marines	781	625	701	913	1,088	812	804
Male	781	625	701	913	1,088	812	804
Officers	52	61	64	55	68	62	34
Servicemen	729	564	637	858	1,020	750	770
Army	17,094	17,178	19,959	21,448	21,301	15,711	16,419
Male	15,878	15,960	18,854	20,286	19,999	14,713	15,415
Officers	1,415	1,491	1,701	1,703	1,790	1,386	1,319
Servicemen	14,463	14,469	17,153	18,583	18,209	13,327	14,096
Female	1,216	1,218	1,105	1,162	1,302	998	1,004
Officers	139	165	130	151	195	163	121
Servicewomen	1,077	1,053	975	1,011	1,107	835	883
Royal Air Force	5,868	6,237	6,171	6,621	7,217	5,219	5,482
Male	5,009	5,438	5,399	5,885	6,438	4,642	4,838
Officers	732	912	811	869	882	686	707
Servicemen	4,277	4,526	4,588	5,016	5,556	3,956	4,131
Female	859	799	772	736	779	577	644
Officers	116	100	101	98	101	71	82
Servicewomen	743	699	671	638	678	506	562

1. Comprises all those who left the Regular Forces and includes deaths.

4.19 Outflow of UK Service personnel: by category

Number

	Financial years					1 Apr - 31 Dec	
	1981-82	1982-83	1983-84	1984-85	1985-86	1985	1986
All Services	29,451	28,657	31,926	34,554	36,521	26,773	27,809
Male officers	2,833	3,214	3,372	3,194	3,388	2,596	2,515
Commissioned officers	2,109	2,530	2,829	2,577	2,678	2,087	1,920
Time and age expiries or exercise of right at option point	885	1,243	1,276	1,106	1,096	827	729
Premature release at own request [1]	851	843	917	1,094	1,223	999	903
Redundancies	-	52	308	10	7	1	6
Medical reasons and deaths	107	142	102	104	110	86	83
Other reasons	266	250	226	263	242	174	199
Officers designate	724	684	543	617	710	509	595
At own request	136	151	84	73	119	88	97
Medical reasons and deaths	6	6	13	12	8	6	14
Other reasons	582	527	446	532	583	415	484
Servicemen	23,966	22,894	26,096	28,901	30,493	22,160	23,190
Before completion of 6 months service	4,705	2,712	5,580	5,925	5,437	3,738	4,492
By exercise of right	3,087	1,787	3,655	4,009	3,863	2,571	3,092
Unsatisfactory, disciplinary and other reasons	1,502	839	1,805	1,695	1,429	1,059	1,278
Medical reasons and deaths	112	85	116	215	144	107	119
Compassionate release	4	1	4	6	1	1	3
After completion of 6 months service	19,261	20,182	20,516	22,976	25,056	18,422	18,698
Time and age expiries or exercise of right at option point	9,009	9,986	10,779	11,501	12,383	8,994	9,923
Premature release at own request [1]	4,158	3,853	4,221	6,113	7,215	5,366	5,178
Redundancies	22	158	346	422	505	320	59
Unsatisfactory, disciplinary and other reasons	4,953	4,821	4,010	3,538	3,379	2,558	2,449
Medical reasons and deaths	963	1,218	948	1,194	1,408	1,058	956
Compassionate release	156	146	212	208	166	126	133
Female officers [2]	311	324	304	298	351	279	243
Time and age expiries or exercise of right at option point	141	182	165	162	201	161	132
At own request	156	127	112	108	110	85	88
Medical reasons and deaths	3	7	6	12	3	2	4
Other reasons	11	8	21	16	37	31	19
Servicewomen	2,341	2,225	2,154	2,161	2,289	1,738	1,861
Time and age expiries or exercise of right at option point	73	77	68	58	96	66	104
By exercise of right to give 18 months notice	411	331	308	305	349	266	348
At own request	150	254	329	307	296	221	289
Marriage, pregnancy	1,327	1,336	1,199	1,261	1,325	1,010	900
Unsatisfactory, disciplinary and other reasons	326	200	198	185	182	143	175
Medical reasons and deaths	44	17	43	41	36	27	41
Compassionate release	10	10	9	4	5	5	4

1. The numbers shown as premature release at own request, for both officers and servicemen, relate only to trained personnel.
2. As the numbers for female officers designate are small, they have been included in those for female officers.

4.20 Recruitment and losses of UK-based civilian non-industrial staff [1]: by occupational group

Number

	Financial years					1 Apr - 31 Dec	
	1981-82	1982-83	1983-84	1984-85	1985-86	1985	1986
Totals [2]							
Recruitment	4,565	5,451	6,050	6,094	7,648	5,463	6,199
Losses	10.632	8,937	9,606	14,458	9,302	6,918	6,565
Open structure and executive:							
Recruitment	133	168	183	196	220	123	254
Losses	749	700	669	1,036	745	443	539
Clerical:							
Recruitment	2,106	2,693	2,720	2,858	3,606	2,706	3,013
Losses	3,417	3,073	3,156	4,081	3,271	2,449	2,584
Secretarial:							
Recruitment	439	530	569	619	693	546	564
Losses	720	726	771	871	712	558	545
Supervisory:							
Recruitment	39	39	19	6	20	13	14
Losses	228	304	309	713	227	168	160
Professional and technological:							
Recruitment	187	138	341	208	247	190	215
Losses	2,344	1,283	1,495	3,859	1,277	878	787
Science:							
Recruitment	277	340	295	340	507	348	542
Losses	644	538	591	828	560	361	309
Cartographic and Hydrographic:							
Recruitment	21	5	29	41	68	60	69
Losses	53	37	48	50	57	48	40
Retired Officers:							
Recruitment	180	182	170	204	190	159	139
Losses	227	186	194	223	220	173	162
Police:							
Recruitment	37	176	303	341	588	374	361
Losses	207	246	303	231	318	251	162
Educational:							
Recruitment	193	153	233	288	221	149	177
Losses	254	271	311	354	306	285	345
Medical and nursing:							
Recruitment	120	132	106	134	133	109	123
Losses	132	190	140	307	170	162	121
Others:							
Recruitment	833	895	1,082	859	1,155	686	728
Losses	1,657	1,383	1,619	1,905	1,439	1,142	811

1. Shows those entering the department from outside the Civil Service and those leaving both the MOD and the Civil Service. The net gains or losses for individual groups in this table do not account entirely for the year to year changes in the corresponding group strength shown in Table 4.11, since transfers between groups, movements from industrial to non-industrial grades and exchanges with government departments are all excluded.
2. Royal Ordnance Factories' recruitment and losses are included up to 1 January 1985.
Royal Fleet Auxiliary crews and some staff serving on ocean weather ships are excluded.

4.21 Outflow of trained Service personnel[1]: major skill or trade groups

Number

	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
Engineering	7,347	5,708	4,855	5,086	5,114	5,793	7,062
Mechanical	3,616	3,415	2,467	2,704	2,542	2,977	3,736
Electrical	2,997	1,742	1,956	1,835	1,976	2,111	2,658
Civil	734	551	432	547	596	705	668
Mechanical transport[2]	3,046	2,378	2,128	2,319	2,072	2,526	2,370
Communications[3]	1,916	1,519	1,296	1,192	1,303	1,444	1,446
Catering	1,448	1,242	1,219	1,248	1,214	1,318	1,551
Accounting and secretarial	1,229	1,123	1,268	1,153	912	1,196	1,300
Supply and stores	1,250	900	978	1,061	1,063	1,145	1,101
Medical and dental[4]	900	864	1,037	1,096	1,111	1,048	1,005
Aviation[5]	1,199	754	836	950	979	899	860
Security and fire services	751	544	529	640	612	791	915
Education[6]	184	144	156	199	238	214	196
Administration and personnel management[7]	86	66	240	292	313	277	207

1 Shows the numbers of personnel leaving the Services possessing certain skills useful to the civilian community. Only personnel in readily identifiable groups of reasonable size have been included. Personnel are classified according to their primary employment in the Services at the time of leaving, in the case of Army officers by the function of their Arm or Corps. Each group covers the full range of skills from the professionally qualified to the semi-skilled.

2 Comprising all personnel trained in the control and operation of wheeled and tracked vehicles.

3 Comprising all personnel trained in the control and operation of communications systems.

4 Comprising doctors, dentists, nurses and supporting staff.

5 Comprising flying and ground control personnel.

6 Including physical education instructors other than those with skills covered by other categories.

7 Including officers of the rank of Captain RN and above, and equivalent ranks in the other Services, not included in other categories.

4.22 Indices [1] and illustrative rates of military salary [2]

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
	1980/81 = 100						
Military salary index: all ranks [3]	100.0	110.6	117.1	125.7	132.1	145.1	153.4
Senior Officers (Major General and above)	100.0	107.1	122.2	130.6	142.7	156.3	176.4
Officers (up to Brigadier)	100.0	113.6	121.9	132.5	139.7	155.2	164.9
Other ranks (Sergeant and above)	100.0	111.2	118.1	127.0	133.6	146.9	155.5
Other ranks (up to Corporal)	100.0	109.2	114.9	122.4	128.5	140.3	147.9
	£						
Illustrative rates of military salary (in terms of Army ranks) [4]							
General	31,000	34,000	37,748	40,500	45,501	60,000	62,100
Brigadier	18,250	20,900	22,750	25,001	27,101	29,401	32,160
Colonel *after 4 years in the rank*	16,151	18,400	19,998	21,879	23,699	25,711	28,123
Lieutenant Colonel *after 4 years in the rank*	13,750	15,801	17,199	18,801	20,451	22,170	24,276
Major *after 4 years in the rank*	11,001	12,399	13,301	14,527	15,699	16,976	18,385
Captain *after 3 years in the rank*	8,501	9,702	10,351	11,298	12,249	13,202	14,217
Lieutenant *after 2 years in the rank*	6,650	7,599	8,048	8,777	9,479	10,191	10,976
Second Lieutenant	5,201	5,949	6,249	6,500	6,986	7,490	8,037
Warrant Officer I *band 6, scale C; after 18 years* [5]	8,983	10,129	10,800	11,694	12,560	13,505	14,571
Warrant Officer II *band 6, scale C; after 18 years* [5]	8,592	9,636	10,257	11,068	11,888	12,786	13,793
Staff Sergeant *band 5, scale C; after 18 years* [6]	7,669	8,519	9,030	9,673	10,384	11,169	12,038
Sergeant *band 5, scale C; after 12 years* [6]	7,172	7,917	8,388	9,018	9,694	10,417	11,213
Corporal *class 1, band 2, scale C*	6,482	7,125	7,508	8,037	8,651	9,289	9,994
Lance Corporal *class 1, band 1, scale C*	5,344	5,814	6,106	6,493	6,924	7,428	7,979
Private *class 2, band 1, scale C*	4,453	4,811	5,048	5,366	5,720	6,081	6,475

1 Indices cover adult male UK Service personnel. In the weighting, based on paid strengths at April 1984, doctors, dentists, chaplains, legal and educational officers are excluded.

2 For officers, the mid point of the incremental scales has been used. For servicemen, the pay bandings have been selected which contain the largest number at each rank. Within each rank, servicemen are divided for the purposes of pay into classes, bands and scales according to their employment classification, the nature of their specialisation and the period of commitment to serve. All forms of additional pay, e.g. flying pay, diving pay, parachute pay are excluded since they are not paid to the majority of Service personnel.

3 Indices are based on rates of pay which were fixed from 1 April for the whole year except that pay increases for senior officers in 1983–84, 1984–85 and 1985–86 and for all ranks in 1984–85 were given in two stages (*see* note 4), and for all ranks were delayed until 1 July 1986; indices are based on the average rate of pay through the year.

4 In 1983–84, salary increases for General and equivalent were delayed and phased to 1 August 1983 (£40,500) and 1 January 1984 (£42,750). In 1984–85, increases for all ranks were phased to 1 April and 1 November 1984. The 1 November salaries are shown in the table: at 1 April the salary for General and equivalent was £44,030; the salaries for other officers were between 4.2% and 5.3% lower than the 1 November levels; the salaries for servicemen were between 3.5% and 4.3% lower than the 1 November levels. In 1985–86, salary increases for General and equivalent were delayed and phased to 1 July 1985 (£52,750) and 1 March 1986 (£60,000).

5 Includes length of service increments — £328.50 (1980–81), £365 (1981–82), £383.25 (1982–83), £402.60 (1983–84), £401.50 (1984–85), £456.25 (1985–86) and £492.75 (1986–87).

6 Includes length of service increments — £182.50 (1980–81), £200.75 (1981–82), £219 (1982–83), £237.90 (1983–84), £237.25 (1984–85), £273.75 (1985–86) and £292 (1986–87).

5.1 Social expenditure included in the Defence budget[1]

The Defence budget provides certain social services for members of the Armed Forces and their families. These are also of benefit to UK-based civilians serving overseas. The figures shown for Education cover the education of Service personnel, the Service Children's Education Authority and contributions towards the cost of educating Service children in other schools. The cost of Service pensions which do not relate to the current Defence effort, is also shown. Civil superannuation, not covered by the Defence budget is not included in this table.

£ million

	1981–82	1982–83	1983–84	1984–85	1985–86	1986–87	1987–88
Total expenditure	1,022	1,118	1,222	1,343	1,436	1,535	1,615
Medical services[2]	212	207	211	231	228	247	250
Education[3]	131	149	170	164	175	183	189
Married accommodation[4]	76	105	86	117	127	126	126
Service pensions[5]	603	657	755	831	906	979	1,050

1 The figures given in this table are based on the original Estimates and reflect the price levels of the Estimates for the years in question.

2 Net of repayments for civilian patients not entitled to treatment in Service hospitals.

3 Comprising education allowances, the cost of Service schools in table 5.10 and adult education. It is difficult to separate the cost of Service schools from the cost of adult education but it is assessed that SCEA schools are approximately one third of the total.

4 Net of rents payable for married quarters.

5 Expenditure on Service pensions is included above as a social payment because it does not relate to the current Defence effort.

5.2 Strengths of uniformed medical staff[1]

1 April

Number

	1981	1982	1983	1984	1985	1986	1987[2]
Qualified doctors:	1,185	1,180	1,165	1,171	1,199	1,210	1,221
Royal Navy	290	295	285	289	283	291	296
Army	507	493	507	515	539	549	553
Royal Air Force	388	392	373	367	377	370	372
Qualified dentists:	380	399	406	399	400	389	391
Royal Navy	98	101	101	92	92	80	83
Army	173	182	197	197	198	197	197
Royal Air Force	109	116	108	110	110	112	111
Nursing services:[3]	3,012	2,976	2,963	2,928	2,896	2,728	2,599
QARNNS[4]	591	596	583	533	473	402	358
QARANC[5]	1,567	1,637	1,682	1,755	1,772	1,692	1,614
PMRAFNS[6]	854	743	718	640	651	634	627
Medical and dental support staff:	5,655	5,808	5,879	5,989	6,043	5,761	5,648
Royal Navy	1,227	1,317	1,280	1,214	1,175	1,071	1,010
Army	2,982	3,051	3,177	3,334	3,349	3,320	3,261
Royal Air Force	1,446	1,440	1,422	1,441	1,419	1,370	1,377

1 Includes staff employed at units (including ships) and in hospitals.

2 Figures for the current year are as at 1 January.

3 Comprises trained personnel and personnel undertaking 'on-the-job' training and held against established posts.

4 Queen Alexandra's Royal Naval Nursing Service (from 1983 includes male nuses).

5 Queen Alexandra's Royal Army Nursing Corps.

6 Princess Mary's Royal Air Force Nursing Service (including male nurses).

Innungsgeschützte Ecke

5.3 Service hospitals

This shows the number of hospitals in the United Kingdom and in areas abroad where there is a significant British military presence. These hospitals take as patients members of all 3 Services and their dependants. In the United Kingdom, hospitals take other civilian patients under arrangements agreed with the National Health Service. The hospitals abroad also admit UK-based MOD civilians and their dependants and certain other personnel (eg Hong Kong Government employed personnel and Gurkhas and their dependants).

	1980	1981	1982	1983	1984	1985	1986
Number of Service hospitals[1]							
United Kingdom[2]	11	11	11	10	9	9	9
Overseas[3]	10	10	10	11	11	10	10
Average number of approved beds							
United Kingdom[2]	2,287	2,290	2,264	2,156	2,056	2,048	2,067
Overseas[3]	1,231	1,247	1,240	1,254	1,260	1,255	1,237
Average number of available beds							
United Kingdom[2]	..	2,286	2,195	2,113	1,956	1,986	1,959
Overseas[3]	..	1,269	1,252	1,261	1,218	1,184	1,117
Average number of occupied beds							
United Kingdom	1,504	1,468	1,351	1,302	1,248	1,231	1,161
Overseas	749	739	708	694	661	599	542
Average percentage of beds occupied[4, 5]							
United Kingdom	65.8	64.2	61.5	61.6	63.8	62.0	59.2
Overseas	60.8	58.2	56.6	55.1	54.3	50.6	48.6
Total number of inpatient admissions							
United Kingdom	76,030	75,900	71,310	69,897	71,560	75,084	72,117
UK Service personnel	28,208	28,565	26,984	26,926	26,884	27,923	26,342
Service dependants	14,620	14,422	14,112	12,825	12,708	12,570	11,386
NHS/others	33,202	32,913	30,214	30,146	31,968	34,591	34,389
Overseas	43,800	42,330	42,706	43,563	43,469	41,746	40,641
UK Service personnel	13,153	12,675	13,566	14,310	14,522	13,767	13,637
Service dependants	21,818	21,542	23,191	22,914	22,154	22,058	22,151
Others	8,829	8,113	5,949	6,339	6,793	5,921	4,853
Average number of admissions per bed[5]							
United Kingdom	33.2	33.1	32.5	33.1	36.6	37.8	36.8
UK Service personnel	12.3	12.5	12.3	12.7	13.7	14.1	13.4
Service dependants	6.4	6.3	6.4	6.1	6.5	6.3	5.8
NHS/others	14.5	14.4	13.8	14.3	16.3	17.4	17.6
Overseas	35.6	33.4	34.1	34.5	35.7	35.3	36.4
UK Service personnel	10.7	10.0	10.8	11.3	11.9	11.6	12.2
Service dependants	17.7	17.0	18.5	18.2	18.2	18.6	19.8
Others	7.2	6.4	4.8	5.0	5.6	5.0	4.3
Average days in hospital per patient							
United Kingdom	7.2	7.1	6.9	6.8	6.4	6.0	5.9
UK Service personnel	8.3	8.0	8.1	7.8	7.4	6.9	6.8
Service dependants	5.1	5.2	5.1	5.0	4.5	4.5	4.1
NHS/others	7.3	7.0	6.7	6.7	6.2	5.8	5.8
Overseas	6.2	6.4	6.1	5.8	5.6	5.2	4.9
UK Service personnel	7.0	7.0	6.6	6.2	5.8	5.5	5.0
Service dependants	5.0	5.2	5.0	4.8	4.5	4.0	3.8
Others	9.0	8.6	8.9	8.5	8.4	9.0	9.5
Outpatients: total attendances[6]							
United Kingdom	377,531	401,370	399,672	369,398	381,640	373,653	385,951
UK Service personnel	118,394	133,048	134,342	118,020	123,095	119,295	125,687
Service dependants	69,305	67,864	65,129	58,543	54,262	48,653	47,359
NHS/others	189,832	200,458	200,201	192,835	204,283	205,705	212,905
Overseas	223,119	228,985	232,115	241,068	235,654	229,605	212,859
UK Service personnel	60,488	65,468	68,735	73,427	68,019	64,418	59,608
Service dependants	96,529	111,808	111,478	116,162	108,160	102,921	96,463
Others	66,102	51,709	51,902	51,479	59,475	62,266	56,788

1 As at 31 December of each year.

2 Nocton Hall closed March 1983. Louise Margaret Maternity Hospital became a part of the Cambridge Military Hospital, Aldershot in October 1984.

3 The British Station Hospital Falkland Islands is not included until 1983. The British Military Hospital Iserlohn closed in September 1985.

4 The 1982 figures reflect the restriction of non-urgent admission during the Falklands campaign.

5 1980 figures are based on the average number of approved beds. From 1981 they are based on the average number of available beds.

6 In addition 30,900 patients were seen at outlying clinics of the hospitals and some 8,200 day patients were treated in the UK and 3,100 overseas in 1986.

5.4 Sickness episodes[1] of UK Service personnel: selected diagnoses

Number

	ICD Codes[2]	1980	1981	1982	1983	1984	1985
Average strength (thousands)		325.2	333.8	325.0	322.4	326.3	325.5
Male		308.7	317.1	309.5	306.6	309.8	309.0
Female		16.5	16.7	15.5	15.8	16.5	16.5
Royal Navy and Royal Marines		72.1	74.3	72.2	71.4	71.0	69.6
British Army		162.5	166.8	162.4	160.4	162.4	162.7
Royal Air Force		90.6	92.7	90.4	90.6	92.9	93.3
All causes	001–999 & V01–V82	55,453	53,746	52,535	51,798	52,821	49,950
Male		50,362	49,013	48,232	47,540	48,275	45,617
Female		5,091	4,733	4,303	4,258	4,546	4,333
Royal Navy and Royal Marines		12,014	12,268	10,768	11,329	11,706	10,728
British Army		26,280	25,225	25,207	24,842	26,030	24,216
Royal Air Force		17,159	16,253	16,560	15,627	15,085	15,006
All diseases	001–799	42,807	41,114	39,524	40,114	41,868	39,283
Infective & parasitic diseases	001–139	3,806	3,252	2,963	3,245	3,360	3,142
Neoplasms	140–239	506	557	607	656	735	730
Endocrine, nutritional & metabolic diseases	240–279	391	469	407	393	351	286
Diseases of blood & blood forming organs	280–289	118	76	90	89	88	69
Mental disorders	290–319	1,467	1,313	1,109	1,165	1,025	1,076
Diseases of the nervous system & sense organs	320–389	1,230	1,177	1,117	1,126	1,059	957
Diseases of the circulatory system	390–459	1,673	1,439	1,510	1,655	1,606	1,463
Diseases of the respiratory system	460–519	11,762	10,094	9,624	9,003	10,159	9,143
Diseases of the digestive system	520–579	7,982	8,208	7,840	7,709	7,651	7,235
Diseases of the genito-urinary system	580–629	2,247	2,371	2,401	2,493	2,474	2,274
Complication of pregnancy, childbirth & puerperium	630–676	217	270	207	152	149	171
Diseases of the skin & subcutaneous tissue	680–709	2,254	2,255	2,146	2,059	1,948	1,849
Diseases of the musculoskeletal system	710–739	6,130	6,763	6,974	7,682	8,381	8,213
Congenital anomalies	740–759	320	369	266	285	272	223
Symptoms & ill-defined conditions	780–799	2,704	2,501	2,263	2,402	2,610	2,452
All injuries[3]	800–999	10,410	10,357	10,725	9,585	9,049	8,773
Aircraft accident injuries		123	132	121	139	91	119
Training & exercise injuries		972	1,148	934	1,283	1,257	1,340
Road traffic accident injuries		1,799	1,813	1,702	1,340	1,141	1,104
Sports injuries		1,951	1,965	1,800	1,746	1,693	1,598
Accidents due to falls or jumps		1,762	1,626	1,734	1,745	1,710	1,727
Other injuries		3,803	3,673	4,434	3,332	3,157	2,885
Supplementary classifications[4]	V01–V82	2,236	2,275	2,286	2,099	1,904	1,894

1 Based upon spells of bedded sickness lasting 2 days or more terminating during the year. Sickness of Army personnel not requiring admission to a medical unit is excluded. Includes all cases whether occurring on or off duty.

2 The ICD code numbers refer to the ninth revision (1977) of the International Statistical Classification of Diseases, Injuries and Causes of Death.

3 Where an injury could be classified under more than one cause (eg aircraft crash during an exercise) then the injury is shown under the first listed cause (ie in the example 'Aircraft accident').

4 Used where no classifiable diagnosis is reported or where the person is not sick, eg admission for investigation, preventive measure or elective surgery.

152

5.5 Medical discharges of UK Service personnel [1,2]

Number

	ICD Codes[3]	1980	1981	1982	1983	1984	1985
All causes	001-999	1,010	882	800	794	1,069	1,382
Male		962	836	772	761	1,023	1,349
Female		48	46	28	33	46	33
Royal Navy and Royal Marines		156	158	142	145	228	246
British Army		622	541	524	511	701	1,004
Royal Air Force		232	183	134	138	140	132
All diseases	001-799	842	738	677	628	839	1,041
Mental disorders	290-319	163	125	107	114	106	122
Diseases of the nervous system & sense organs	320-389	196	178	152	160	177	169
Diseases of the musculoskeletal system	710-739	218	195	222	164	313	466
Other diseases	001-799 nes	265	240	196	190	243	284
All injuries	800-999	168	144	123	166	230	341

1. Medical discharges are those invalided out of the Services before the completion of their engagement.
2. Average strength figures are given in Table 5.4.
3. See note 2 on page 44

5.6 Deaths of UK Service personnel [1,2]

Number

	ICD Codes[3]	1981	1982	1983	1984	1985	1986
All causes	001-999	368	596	349	332	314	294
Male		362	592	345	325	309	291
Female		6	4	4	7	5	3
Royal Navy and Royal Marines		69	161	77	61	56	52
British Army		203	336	167	164	148	150
Royal Air Force		96	99	105	107	110	92
All diseases	001-799	137	119	129	120	112	117
Neoplasms	140-239	54	48	49	54	62	52
Heart and Cerebrovascular disease	390-438	65	56	63	56	44	57
Other diseases	001-799 nes	18	15	17	10	6	8
All injuries	800-999	231	477	220	212	202	177
Road traffic accident inuries		130	115	115	113	113	71
Other injuries[4]		101	362	105	99	89	106

1. Includes all deaths whether occurring on or off duty. Latest year figures by cause are provisional.
2. Average strength figures are given in Table 5.4.
3. See note 2 on page 44.
4. The 1982 figure includes UK Service personnel killed in the Falklands Campaign: All services 236; Royal Navy and Royal Marines 113, Army 122, Royal Air Force 1.

5.7 Service aircraft: accidents involving loss or serious damage, rates and casualties

	1980	1981	1982[1]	1983	1984	1985	1986
Number of accidents							
All Services	37	32	45	40	27	24	26
Helicopters	12	10	16	10	6	8	11
Fixed wing aircraft	25	22	29	30	21	16	15
Royal Navy	5	8	14	10	6	6	3
Helicopters	3	7	10	6	3	5	2
Fixed wing aircraft	2	1	4	4	3	1	1
Army	9	1	6	6	2	2	7
Helicopters	7	1	6	3	2	2	7
Fixed wing aircraft	2	-	-	3	-	-	-
Royal Air Force	23	23	25	24	19	16	16
Helicopters	2	2	-	1	1	1	2
Fixed wing aircraft	21	21	25	23	18	15	14
Rates per 10,000 flying hours							
Royal Navy	*0.56*	*0.86*	*1.14*	*0.98*	*0.61*	*0.62*	*0.30*
Helicopters	*0.46*	*1.01*	*1.07*	*0.79*	*0.43*	*0.71*	*0.27*
Fixed wing aircraft	*0.81*	*0.42*	*1.36*	*1.56*	*1.10*	*0.37*	*0.36*
Army	*0.99*	*0.11*	*0.63*	*0.62*	*0.20*	*0.19*	*0.68*
Helicopters	*0.84*	*0.12*	*0.68*	*0.33*	*0.21*	*0.23*	*0.81*
Fixed wing aircraft	*2.63*	-	-	*4.08*	-	-	-
Royal Air Force	*0.48*	*0.50*	*0.49*	*0.48*	*0.38*	*0.33*	*0.31*
Helicopters	*0.33*	*0.32*	-	*0.14*	*0.13*	*0.13*	*0.25*
Fixed wing aircraft	*0.50*	*0.52*	*0.57*	*0.54*	*0.42*	*0.37*	*0.32*
Casualties to personnel[2]							
Killed	23	11	35	19	10	17	15
Royal Navy	3	5	4	1	1	7	-
Royal Marines	3	-	1	-	-	-	-
Army	3	-	20	-	3	1	6
Royal Air Force	12	6	7	16	4	9	8
Allied and foreign[3]	1	-	2	1	-	-	1
Civilians	1	-	1	1	2	-	-
Seriously injured	12	10	17	21	14	12	15
Royal Navy	2	-	2	6	1	3	1
Royal Marines	-	-	-	-	-	-	-
Army	1	-	6	1	1	5	4
Royal Air Force	9	10	8	14	12	4	10
Allied and foreign[3]	-	-	1	-	-	-	-
Civilians	-	-	-	-	-	-	-

1. Figures in this column do not include details of aircraft lost to or casualties caused by enemy fire in the Falklands Campaign. Aircraft accidently lost in the Falklands Campaign are included.

2. Service casualties are identified to their serving department and not to the parent service of the aircraft involved.

3. These are officers on exchange from allied and foreign forces.

5.8 Accidents involving loss or serious damage to aircraft of the three Services, 1 January 1986 to 31 December 1986

Date	Aircraft	Parent Service	Service Casualties		Civilian Casualties	
			Killed	Serious Injury	Killed	Serious Injury
2 Jan	Lynx	Army				
7 Jan	Phantom	RAF		2		
21 Feb	Gazelle [1]	Army				
20 Mar	Lynx	Army				
25 Mar	Wasp	RN		1		
16 Apr	Sea Harrier	RN				
29 Apr	Gazelle	Army				
13 May	Chinook [2]	RAF	3 [1]	3 [1]		
25 May	Vampire) [2]	RAF		2		
25 May	Meteor)	RAF	2			
6 Jun	Jet Provost) [2]	RAF		1		
6 Jun	Jet Provost)	RAF				
17 Jun	Harrier	RAF				
19 Jun	Victor	RAF				
28 Jun	Harrier	RAF	1			
3 Jul	Phantom	RAF				
7 Jul	Hawk	RAF				
12 Jul	Gazelle	Army	1	2		
15 Jul	Lightning	RAF				
17 Sep	Lynx	Army	3			
29 Sep	Bulldog	RAF		2		
7 Oct	Gazelle	Army	1	1		
20 Oct	Sea King	RN				
3 Nov	Hawk	RAF				
5 Nov	Wessex	RAF	3			
27 Nov	Jaguar	RAF [3]	1			
2 Dec	Tornado [2]	RAF		1		
10 Dec	Tornado)	RAF				
10 Dec	Tornado)	RAF				

1. Includes one Army personnel.
2. Mid-air collision.
3. USAF aircrew.

5.9 Strengths of male UK Service personnel and numbers married[1] : by age

Mid-year

Number

	1980	1981	1982	1983	1984	1985	1986
Male Officers:							
Strengths							
All ages	39,810	40,721	40,515	39,910	39,857	40,038	40,335
17-19	870	971	763	721	814	834	920
20-24	5,248	5,709	5,724	5,494	5,440	5,544	5,968
25-29	5,237	5,401	5,613	5,920	6,265	6,491	6,665
30-34	6,893	6,632	5,909	5,365	5,080	5,030	5,068
35-39	6,753	7,076	7,509	7,612	7,475	7,204	6,970
40-44	5,702	5,557	5,536	5,577	5,865	6,289	6,604
45-49	5,510	5,507	5,428	5,198	4,971	4,794	4,550
50 and over	3,597	3,868	4,033	4,023	3,947	3,852	3,590
Numbers married							
All ages	30,135	30,504	30,363	29,734	29,317	29,231	29,030
17-19	-	2	2	-	1	-	-
20-24	521	600	607	592	556	510	548
25-29	3,053	3,191	3,236	3,228	3,305	3,434	3,586
30-34	6,075	5,797	5,133	4,630	4,330	4,260	4,299
35-39	6,313	6,640	7,032	7,105	6,986	6,741	6,521
40-44	5,457	5,318	5,276	5,324	5,597	6,014	6,310
45-49	5,264	5,275	5,220	5,007	4,762	4,586	4,336
50 and over	3,432	3,681	3,857	3,846	3,780	3,686	3,430
Servicemen:							
Strengths							
All ages	267,154	276,929	268,452	266,206	269,740	269,391	265,083
16-19	64,220	64,848	50,565	41,876	41,158	42,500	41,956
20-24	83,306	89,109	91,936	94,717	95,160	90,850	86,277
25-29	43,626	46,254	48,964	53,096	57,526	60,662	61,892
30-34	34,959	34,655	32,573	31,396	30,972	31,307	32,060
35-39	25,475	26,593	25,784	29,608	29,658	29,044	28,179
40-44	10,129	10,006	9,959	9,808	9,559	9,515	9,379
45-49	3,434	3,482	3,564	3,641	3,665	3,471	3,367
50 and over	1,603	1,982	2,066	2,066	2,000	2,022	1,963
Numbers married							
All ages	133,567	137,569	140,668	142,644	143,222	142,269	139,615
16-19	1,591	1,677	1,497	1,009	664	550	558
20-24	28,602	30,364	31,619	31,603	30,628	28,628	26,066
25-29	33,643	35,107	37,059	39,595	42,243	44,032	44,800
30-34	31,486	31,139	29,194	28,123	27,636	27,557	26,276
35-39	23,746	24,720	26,757	27,560	27,563	26,910	26,061
40-44	9,572	9,421	9,323	9,179	8,935	8,920	8,791
45-49	3,233	3,281	3,373	3,435	3,474	3,277	3,176
50 and over	1,696	1,860	1,946	1,940	1,880	1,894	1,841

1. Widowed and divorced personnel are excluded from the numbers married, except those in the Royal Navy, the Royal Marines and the Army with dependent children.

154

Einreißgeschützte Ecke

5.10 Strengths of male UK Service personnel and numbers married [1]: by rank [2]

Mid-year

Number

	1980	1981	1982	1983	1984	1985	1986
Male Officers							
Strengths							
All ranks	39,810	40,721	40,515	39,910	39,857	40,038	40,335
Major General and above	228	216	221	218	216	207	202
Brigadier	384	387	391	382	375	382	384
Colonel	1,458	1,485	1,484	1,476	1,437	1,429	1,427
Lieutenant Colonel	4,516	4,654	4,590	4,479	4,407	4,375	4,434
Major	11,614	11,860	11,837	11,659	11,546	11,467	11,325
Captain	14,100	14,125	14,262	14,088	14,076	14,085	14,115
Lieutenant and below	7,510	7,994	7,730	7,608	7,800	8,093	8,448
Numbers married							
All ranks	30,135	30,504	30,363	29,734	29,317	29,231	29,030
Major General and above	219	204	209	211	208	204	199
Brigadier	373	376	383	373	365	373	372
Colonel	1,385	1,394	1,415	1,398	1,378	1,379	1,380
Lieutenant Colonel	4,307	4,388	4,374	4,250	4,219	4,210	4,236
Major	10,797	11,067	11,076	10,913	10,739	10,645	10,479
Captain	11,237	11,212	11,152	10,793	10,614	10,579	10,575
Lieutenant and below	1,817	1,863	1,754	1,796	1,794	1,841	1,789
Servicemen:							
Strengths							
All ranks	267,154	276,929	268,452	266,206	269,740	269,391	265,083
Warrant Officer	11,219	11,557	11,565	11,441	11,485	11,397	11,387
Staff Sergeant	22,930	23,160	23,076	23,174	23,454	23,254	22,880
Sergeant	34,651	35,066	35,403	35,148	34,779	34,640	34,362
Corporal	48,440	50,484	51,439	51,842	52,156	53,131	53,062
Lance Corporal	21,693	22,757	23,211	23,078	22,824	22,972	23,150
Private (including juniors)	128,221	133,905	123,758	121,523	125,042	123,997	120,242
Numbers married							
All ranks	133,567	137,589	140,668	142,644	143,222	142,269	139,615
Warrant Officer	10,660	11,163	11,177	11,066	11,098	11,003	10,998
Staff Sergeant	21,605	21,488	21,848	21,468	21,660	21,569	20,955
Sergeant	30,581	30,797	30,998	30,753	30,320	30,100	29,669
Corporal	35,329	36,397	37,314	37,434	37,671	38,237	38,204
Lance Corporal	11,631	12,358	13,178	13,500	13,540	13,475	13,384
Private (including juniors)	23,861	25,386	26,655	28,434	28,935	28,085	26,406

1. Widowed and divorced personnel are excluded from the numbers married, except those in the Royal Navy, the Royal Marines and the Army with dependent children.

2. In Army terms.

As a result of training and assistance given by the Services to their personnel, skills valuable in later civilian life are acquired and formal qualifications are often obtained. Not all the degrees are obtained at universities. A number of degree courses are run at the Service education establishments, Royal Naval Engineering College Manadon and Royal Military College of Science Shrivenham.

In Service units and ships, education officers organise instruction for a range of General Certificate of Education and other academic examinations. In addition, Service personnel may attend local education authority and other external courses and will normally be eligible for financial assistance, but these instances are not recorded centrally and are excluded from this table.

Number

	1979	1980	1981	1982	1983	1984	1985
Degrees[1]							
Postgraduate degrees	94	72	91	90	79	113	122
Royal Navy and Royal Marines	20	14	17	19	22	28	20
Army	62	51	53	48	39	56	76
Royal Air Force	12	7	21	23	18	29	26
Medical and dental degrees	118	101	126	87	90	85	66
Royal Navy and Royal Marines	29	21	23	32	17	22	3
Army	60	58	56	40	47	53	52
Royal Air Force	29	22	47	15	26	10	11
Other first degrees	397	349	365	413	445	434	565
Royal Navy and Royal Marines	125	123	135	142	165	151	111
Army	204	162	179	207	191	199	168
Royal Air Force	68	64	51	64	89	84	64
Higher National Certificates[2]	44	29	64	26	2	25	20
Royal Navy and Royal Marines	-	-	-	-	-	-	-
Army	44	29	64	26	2	25	20
Royal Air Force	-	-	-	-	-	-	-
Ordinary National Certificates[2]	247	134	7	7	-	15	20
Royal Navy and Royal Marines	123	-	-	-	-	-	-
Army	46	6	7	7	-	15	20
Royal Air Force	78	128	-	-	-	-	-
General Certificate of Education							
Advanced level[3]	58	48	29	23	26	53	46
Royal Navy and Royal Marines	8	26	7	4	7	30	16
Army	32	8	12	11	5	13	17
Royal Air Force	18	14	10	8	14	10	11
Ordinary level[4]	2,936	2,726	2,837	2,611	2,971	4,116	3,417
Royal Navy and Royal Marines	1,240	1,198	1,091	1,013	1,206	2,318	1,665
Army	511	461	506	300	435	374	553
Royal Air Force	1,185	1,067	1,240	1,298	1,330	1,424	1,359
City and Guilds of London Institute							
Operator certificates[2]	604	819	288	258	161	254	429
Royal Navy and Royal Marines	202	661	2	8	3	-	-
Army	402	158	286	250	158	234	409
Royal Air Force	-	-	-	-	-	20	20
Craft certificates[2]	5,231	2,911	7,486	6,524	9,794	9,596	7,386
Royal Navy and Royal Marines	737	570	2,194	2,767	3,675	2,849	2,887
Army	2,424	1,607	2,635	2,148	2,412	3,338	2,500
Royal Air Force	2,070	734	2,657	1,609	3,707	3,409	2,849
Technician certificates[2]	1,025	374	283	211	104	718	760
Royal Navy and Royal Marines	46	-	4	-	-	-	-
Army	635	374	279	211	104	138	-
Royal Air Force	344	-	-	-	-	580	760
Business/Technician Education Council							
Higher certificates/diplomas[2]	15	60	178	328	658	569	658
Royal Navy and Royal Marines	-	-	-	168	340	278	343
Army	15	7	34	42	101	106	167
Royal Air Force	-	53	144	118	217	185	168
Certificates/diplomas[2]	843	1,575	1,749	2,386	2,350	2,390	2,907
Royal Navy and Royal Marines	362	611	480	621	884	639	666
Army	-	139	195	584	463	386	466
Royal Air Force	481	825	1,074	1,181	1,003	1,365	1,771
Heavy Goods Vehicle driving test passes[5]	9,046	16,151	13,964	11,726	11,804	11,689	10,727
Royal Navy and Royal Marines	41	131	30	175	295	294	55
Army	7,611	14,173	12,292	10,129	9,665	10,290	9,200
Royal Air Force	1,394	1,847	1,642	1,422	1,844	1,105	1,444

1. Includes degrees obtained by serving personnel and University Cadets at Universities and Service educational establishments.
2. Includes only candidates studying for and/or taking examinations directly through their Service.
3. Taken at grade 'E' and above.
4. Taken at grade 'C' and above.
5. All heavy goods vehicle classes combined.

155

5.12 Service married accommodation

Details are given of the accommodation provided for Service families in the United Kingdom and abroad partly by building to approved standards and partly by renting accommodation. The multiple hirings in British Army of the Rhine (BAOR) and Royal Air Force Germany (RAFG) relate to accommodation built by private developers and leased by the Federal German authorities on behalf of the British Forces. Small numbers of multiple hirings are held elsewhere and are included in the 'hirings' figures.

January

Thousands

	1981	1982	1983	1984	1985	1986	1987[1]
United Kingdom	88.7	87.5	87.0	85.9	85.3	84.3	82.5
Permanent holdings	88.3	87.2	86.6	85.7	85.0	84.0	82.4
Furnished hirings	0.3	0.3	0.3	0.3	0.2	0.3	0.1
Royal Navy:							
Permanent holdings	15.4	15.1	14.9	14.8	14.6	14.5	14.1
Furnished hirings	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Army:							
Permanent holdings[2]	42.1	41.6	41.5	41.0	40.7	40.2	39.4
Furnished hirings	0.1	0.1	0.1	0.1	0.1	0.1	-
Royal Air Force:							
Permanent holdings	30.8	30.5	30.2	29.9	29.7	29.3	28.9
Furnished hirings	0.1	0.1	0.1	0.1	0.1	0.1	-
Vacancies summary (United Kingdom only)							
Total vacant	15.8	13.6	14.2	14.3	14.2	14.0	15.0
Vacancies as a percentage of holdings	*17.9*	*15.6*	*16.4*	*16.8*	*16.7*	*16.7*	*18.2*
Overseas	46.4	46.0	46.0	46.0	47.6	50.3	50.6
Permanent holdings	21.4	21.4	21.4	21.4	21.5	21.6	21.5
Hirings	25.0	24.5	24.6	24.6	26.1	28.7	29.1
Royal Navy:							
Permanent holdings	0.6	0.6	0.6	0.6	0.7	0.7	0.6
Army:							
Permanent holdings[3]	16.4	16.4	16.4	16.4	16.3	16.3	16.3
Multiple hirings in BAOR[3]	17.5	17.3	17.4	17.4	17.7	20.1	20.5
Other hirings[3]	2.0	1.7	1.6	1.6	2.1	2.1	2.1
Royal Air Force:							
Permanent holdings	4.4	4.4	4.4	4.4	4.5	4.6	4.6
Unfurnished hirings in RAF Germany[4]	4.5	4.6	4.6	4.7	5.4	5.5	5.5
Other hirings	0.4	0.3	0.4	0.3	0.3	0.4	0.4
Tri-service hirings	0.6	0.6	0.6	0.6	0.6	0.6	0.6

1. Figures for 1987 are taken as at November 1986 due to a change in reporting dates.
2. Including a small number of unfurnished hirings taken on from local authorities and the Scottish Special Housing Association, which are not recorded separately.
3. Figures for 1987 are provisional.
4. Includes multiple hirings.

5.13 Land and foreshore holdings : location [1]

1 April

Thousand hectares

	1980	1981	1982	1983	1984	1985	1986
United Kingdom							
Land: Freehold	220.2	220.1	217.8	215.9	215.0	211.1	210.9
Leasehold	11.9	11.9	11.9	11.9	11.6	11.4	10.9
Foreshore: Freehold:	13.2	13.2	13.2	13.1	13.1	13.1	13.1
Leasehold	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Rights [2]	31.1	36.7	36.7	36.7	36.0	36.0	36.2
England							
Land: Freehold	179.9	179.6	177.7	175.9	174.9	172.7	172.2
Leasehold	8.0	8.0	8.0	8.0	7.7	7.6	7.6
Foreshore: Freehold	10.5	10.4	10.4	10.4	10.4	10.4	10.4
Leasehold	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Rights [2]	27.1	27.1	27.1	27.1	26.4	26.5	26.3
Wales							
Land: Freehold	20.2	20.2	19.9	19.9	19.9	19.4	19.7
Leasehold	0.7	0.7	0.7	0.6	0.6	0.6	0.1
Foreshore: Freehold	1.1	1.1	1.1	1.1	1.0	1.0	1.0
Leasehold	-	-	-	-	-	-	-
Rights [2]	1.2	1.2	1.2	1.2	1.2	1.1	1.5
Scotland							
Land: Freehold	17.8	17.9	17.9	17.8	17.8	16.7	16.7
Leasehold	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Foreshore: Freehold	1.6	1.5	1.5	1.5	1.5	1.5	1.5
Leasehold	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Rights [2]	2.7	8.4	8.4	8.3	8.3	8.3	8.3
Northern Ireland							
Land: Freehold	2.3	2.3	2.3	2.3	2.4	2.3	2.3
Leasehold	1.0	1.0	0.8	0.8	0.8	0.7	0.7
Foreshore: Freehold	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Leasehold	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Rights [2]	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Defence land used for agricultural purposes (freehold and leasehold)							
Used for grazing only	60.2	59.8	58.8	58.8	58.8	58.6	58.1
Full agricultural use	53.6	52.0	50.3	50.9	51.2	50.5	49.5
Total	113.8	111.9	109.1	109.7	110.0	109.1	107.6
England	88.4	86.9	84.8	85.8	85.0	84.2	84.0
Wales	15.3	15.2	14.8	15.0	15.0	14.8	14.8
Scotland	9.0	8.8	8.5	8.3	9.3	9.5	8.3
Northern Ireland	1.1	1.1	1.1	0.6	0.6	0.6	0.5

1. Comprises land and foreshore owned by the Ministry of Defence and land and foreshore over which it has limited rights under grants or licences. It also includes land declared as surplus to Defence requirements. During the year to 30 November 1986, the size of the Defence Estate was reduced by 515 hectares. At that date, 1644 hectares were awaiting disposal by the Property Services Agency. MOD office buildings which are held by the Department of the Environment as part of the Civil Estate, are excluded.

2. About 90% of this land is held under licences.

5.14 Land and foreshore[1] holdings: type of use

1 April

Thousand hectares

	1980	1981	1982	1983	1984	1985	1986
Freehold	233.6	233.3	231.0	229.0	228.1	224.2	224.0
Royal Navy	11.9	11.9	11.8	11.7	11.6	11.5	11.4
Airfields etc	1.5	1.5	1.5	1.5	1.4	1.3	1.2
Naval bases	1.1	1.1	1.1	1.0	1.0	1.0	1.0
Training areas and ranges	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Barracks and camps	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Storage and supply depots	3.6	3.6	3.5	3.4	3.4	3.4	3.4
Radio and W/T stations	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Miscellaneous	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Army	149.9	149.5	149.0	149.0	148.0	147.4	147.3
Airfields etc	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Training areas and ranges	133.7	133.8	133.6	133.7	133.4	133.2	133.4
Barracks and camps	9.4	9.2	9.0	8.9	8.8	8.7	8.5
Storage and supply depots	5.0	4.8	4.7	4.5	4.3	4.1	4.0
Radio and W/T stations	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Miscellaneous	1.0	0.9	0.9	0.8	0.8	0.7	0.7
Royal Air Force	39.8	39.6	39.0	38.1	38.0	38.1	38.3
Airfields etc	27.3	27.0	26.6	26.1	25.9	25.9	25.9
Training areas and ranges	3.7	3.6	3.6	3.6	3.7	3.8	4.2
Barracks and camps	1.1	1.1	1.0	0.9	0.9	0.9	0.8
Storage and supply depots	30	2.9	2.8	2.8	2.8	2.8	2.8
Radio and W/T stations	3.8	4.2	4.1	4.0	4.0	4.0	4.0
Miscellaneous	0.8	0.8	0.8	0.8	0.7	0.7	0.6
Procurement Executive establishments	32.0	32.3	31.3	31.0	30.5	27.2	27.0
Leasehold	16.9	16.8	16.8	16.8	16.5	16.4	15.8
Royal Navy	2.6	2.6	3.2	3.2	2.6	2.6	2.6
Airfields etc	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Training areas and ranges	2.3	2.3	2.9	2.9	2.3	2.3	2.3
Miscellaneous	-	0.1	0.1	0.1	0.2	0.2	0.2
Army	4.6	4.6	4.0	4.0	4.6	4.3	4.2
Training areas and ranges	4.3	4.2	3.7	3.7	4.2	3.9	3.8
Barracks and camps	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Miscellaneous	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Royal Air Force	8.4	8.4	8.4	8.4	8.1	8.4	7.9
Training areas and ranges	7.9	7.8	7.9	7.8	7.8	7.9	7.4
Storage and supply depots	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Radio and W/T stations	0.4	0.4	0.4	0.4	0.2	0.4	0.4
Procurement Executive establishments	1.2	1.2	1.2	1.2	1.2	1.1	1.1
Rights held[2]	31.1	36.7	36.7	36.7	36.0	36.0	36.2
Royal Navy	13.7	13.7	13.8	13.7	13.7	14.0	14.0
Training areas and ranges	13.3	13.3	13.3	13.5	13.4	13.6	13.6
Barracks and camps	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Radio and W/T stations	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Miscellaneous	-	0.1	0.1	0.1	-	0.1	0.1
Army	13.7	13.7	13.5	13.5	12.9	12.8	13.2
Training areas and ranges	13.5	13.0	12.8	12.9	12.3	12.2	12.6
Barracks and camps	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Miscellaneous	-	0.5	0.5	0.5	0.5	0.5	0.5
Royal Air Force	2.5	8.2	8.2	8.2	8.1	8.0	8.0
Airfields etc	0.9	0.9	0.9	0.9	0.9	1.0	1.0
Training areas and ranges	1.2	6.9	6.9	6.9	6.8	6.6	6.5
Radio and W/T stations	0.2	0.3	0.3	0.3	0.3	0.2	0.3
Miscellaneous	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Procurement Executive establishments	1.3	1.2	1.1	1.2	1.3	1.2	1.0

1. The overall split between land and foreshore is given in table 5.13.
2. About 90% of this land is held under licences.

5.15 Service entertainment and welfare

	1980	1981	1982	1983	1984	1985	1986
	Number						
Services Sound and Vision Corporation (SSVC)[1]							
Cinemas	60	59	55	36	25	21	19
United Kingdom	10	10	9	5	5	4	2
Overseas	50	49	46	31	20	17	17
of which: Federal Republic of Germany	45	39	37	22	10	10	10
Combined Services Entertainment							
Production of stage and cabaret shows (for Northern Ireland and overseas)	44	51	57	54	50	48	47
Trading outlets	80	78	78	79	81	77	70
Video libraries	-	-	40	40	70	76	88
of which: Federal Republic of Germany	-	-	25	25	36	36	38
NAAFI[2] trading outlets	1,147	1,112	1,122	1,087	1,060	1,067	1,041
United Kingdom	690	682	690	682	675	685	666
BAOR/RAFG	280	260	256	253	243	244	237
Elsewhere including HM ships	177	170	176	152	142	138	138
	Thousands						
Circulation of Service journals[3]							
Navy News (monthly)	85	86	91	97	102	103	104
Soldier (Magazine (fortnightly)[4]	35	32	30	30	29	30	27
RAF News (fortnightly)	32	34	33	34	33	31	32

1. The Services Sound and Vision Corporation (SSVC) is a registered charity and a private company limited by guarantee with its head office at Chalfont Grove, Gerrards Cross, Bucks. It incorporates the former Services Kinema Corporation (SKC) and the British Forces Broadcasting Service (BFBS). Its Memorandum of Association defines the charitable objects for which the Corporation is established and Articles of Association define the manner in which it is governed. The Corporation is financially self-supporting and there is no subsidy from Public Funds. The services provided include television and radio broadcasting, training, support and audio visual entertainment.

2. NAAFI is a registered company limited by guarantee. A Memorandum of Association defines its powers and objects while Articles of Association govern the way in which the NAAFI Council and the Board of Management are appointed and work. Its trading outlets comprise shops and messing issue stores, Junior Ranks clubs and ships canteens. Figures for petrol stations, sub-post offices, bowling alleys and shops attached to Junior Ranks clubs are included but shops and stores opened for military exercises or temporary training camps are excluded.

3. The figures quoted give the average per issue for each year.

4. Soldier News ran parallel with Soldier Magazine until 1981.

5.16 SSVC[1] Broadcasting Division (BFBS)

		1980	1981	1982	1983	1984	1985	1986
		Hours/week						
SSVC TV	Live/recorded[2]	56	60	60	61	60	63	68
	Recorded[3]	-	-	-	-	-	28	30
	Cassette[4]	-	21	21	21	21	21	21
BFBS Radio								
London:[5]	Total[6]	Previously			30	41	53	80
	Produced locally recorded	BFBS Radio			27	38	42	42
	BBC material (satellite/live link)	within MOD			*	*	*	27
Cologne:	Total[7]	168	168	168	168	182	188	189
	Produced locally	76	76	76	78	92	93	97
Cyprus	Total[8]	168	183	183	168	194	233	252
	Produced locally	94	94	94	113	113	109	135
Gibraltar	Total (2 Channels)	177	177	177	212	213	216	246
	Produced locally	102	102	102	132	119	120	127
Hong Kong:								
English:	Total	30	80	99	99	135	126	168
	Produced locally	3	39	42	44	45	59	72
Nepali:	Total	60	72	76	76	76	96	76
	Produced locally	52	64	72	73	72	87	74
Nepal:	Total	-	-	-	21	44	46	110
	Nepali output	-	-	-	-	-	-	16
	Produced locally	-	-	-	18	26	28	6
Brunei:	Total	-	-	-	71	72	72	134
	Produced locally	-	-	-	20	14	14	64
Belize:	Total	-	-	-	-	-	137	168
	Produced locally	-	-	-	-	-	70	78
Falkland Islands:[9]								
	Total	-	-	-	-	-	-	121
	Produced locally	-	-	-	-	-	27	34
		Thousands						
Estimated target audiences[10]								
	SSVC TV (Germany/Cyprus)	145	154	156	160	165	175	180
	Cassette	*	*	*	8	15	20	20
	BFBS radio	196	200	200	202	208	218	220

1. See Note 1 on page 54
2. Drawn proportionately from ITV and BBC channels to provide a service in the Federal Republic of Germany.
3. As in (2) to provide a service in the Cyprus Sovereign Base areas, and at Mount Pleasant Falkland Islands from 4 Dec 1986.
4. Drawn from (2) to serve British Forces personnel in Belize, Sardinia, the Falkland Islands, Nepal, Brunei, Sinai and HM Ships.
5. BFBS London is a production centre supplying programme material on tapes or by satellite to BFBS Radio Station worldwide. Material on casettes is also despatched daily to HM Ships at sea and small specialist service units serving in remote areas.
6. Including syndicated material from stations.
7. Main Station, Berlin Rheindahlen Bielefeld and Osnabruck News Studio.
8. Dhekelia Main Station (2 channels) and Episkopi.
9. The BFBS station in the Falkland Islands operates in support of the Falkland Islands Broadcasting Station which is managed by the Falkland Islands government. By agreement between the Military and Civil Commissioners the responsibility for broadcasting hours is divided between BFBS and FIBS although some London-produced BFBS programmes are used to supplement other sources of material during hours for which FIBS is nominally responsible.
10. Comprising UK based civilians, Service personnel and their dependents.

5.17 Service pensioners[1]

1 April — Thousands

	1980	1981	1982	1983	1984	1985	1986
All pensioners	221.7	220.4	219.9	220.3	221.9	222.9	224.7
Male	219.5	218.2	217.7	218.0	219.6	220.5	222.3
Female	2.2	2.2	2.2	2.3	2.4	2.4	2.4
Officers	59.3	59.1	59.0	59.1	59.6	59.8	60.0
Male	58.1	57.9	57.8	57.9	58.4	58.5	58.8
Female	1.2	1.2	1.2	1.2	1.3	1.3	1.3
Others	162.4	161.3	160.9	161.2	162.3	163.2	164.7
Male	161.4	160.3	159.9	160.1	161.2	162.0	163.5
Female	1.0	1.0	1.0	1.1	1.1	1.1	1.2
Age of pensioner							
under 40	7.8	7.2	6.8	6.6	6.7	6.6	7.1
40–49	47.5	46.5	45.8	45.4	45.7	46.0	46.1
50–59	61.2	59.1	58.1	58.4	59.4	60.7	62.9
60–69	59.8	60.7	61.2	60.5	59.5	57.5	55.8
70–79	36.3	36.5	37.0	38.0	38.8	39.8	39.6
80 and over	9.1	10.3	11.0	11.4	11.8	12.3	13.1
Pension commenced[2]							
pre 1945	15.4	13.8	12.4	11.0	9.8	8.7	7.6
1945–1955	36.7	34.3	31.9	29.5	27.2	25.2	23.0
1956–1961	36.4	35.3	34.2	33.1	31.9	30.9	29.5
1962–1969	52.1	51.1	50.1	49.3	48.2	46.8	45.9
1970–1974	38.2	37.8	37.6	37.2	36.8	36.4	35.9
1975–1979	42.7	42.3	42.1	41.9	41.7	41.4	41.2
1980–1984	*	5.7	11.5	18.3	26.4	33.5	33.6
1985	*	*	*	*	*	*	8.1

1. Comprises recipients of Service retired pay (officers) and pensions (servicemen/servicewomen) and invaliding and attributable retired pay and pensions but not purely disability pensions.

2. Financial years beginning 1 April, except 1945 when the effective date was 19 December.

158

6.1 Armed Forces and security in Northern Ireland

This shows annual figures of the Regular Forces in Northern Ireland in terms of major units of the combat arms, eg battalion or regiment, the size of which may vary according to the primary role.

Number

	1981	1982	1983	1984	1985	1986	1987[2]
Regular Army[1]							
Force level at 1 April:							
Major units of the combat arms[3]	10	9	8	8	8	10	10
Resident units	6	6	6	6	6	6	6
Roulement units	4	3	2	2	2	2	2
Incremental reinforcement battalions	-	-	-	-	-	2	2
Total units which served in the province during the year	24	22	18	15	18	23	..
Ulster Defence Regiment at 1 April							
Full time	2,738	2,739	2,793	2,683	2,717	2,795	2,784
Males	2,580	2,561	2,601	2,483	2,522	2,594	2,568
Females	158	178	192	200	195	201	216
Part time	4,741	4,391	4,342	4,094	3,732	3,767	3,751
Males	4,159	3,893	3,798	3,563	3,224	3,220	3,217
Females	582	498	544	531	508	547	534
Deaths							
Service personnel	23	28	15	19	6	12	..
of which serving in the Ulster Defence Regiment	13	7	10	10	4	8	..
Security							
Bombs neutralised	131	113	101	55	67	82	..
Weight of explosives (Kgs):							
Neutralised	4,159	3,311	3,403	2,774	3,500	4,292	..
In explosions (estimated)	4,364	5,080	3,140	3,875	5,312	5,130	..
Finds:							
Explosives (Kgs)	3,419	2,297	1,707	3,871	3,345	2,443	..
Firearms	409	317	201	197	238	215	..
Ammunition	47,127	41,452	32,451	27,211	13,748	29,061	..
Persons charged with serious security-type offences	918	686	613	528	522	655	..

1. Includes Royal Marine commandos in the infantry role.
2. Figures for the latest year are as at 1 January.
3. Excludes temporary deployments.

6.2 Search and rescue operations at home

This covers incidents in which Rescue Co-ordinating Centres (RCCs) in the United Kingdom co-ordinated search and rescue (SAR) actions in which elements of the Armed Forces were involved. It also includes urgent medical incidents in which the Forces SAR facilities gave assistance (eg inter-hospital transfers).

Number

	1980	1981	1982	1983	1984	1985	1986
Incidents [1]	1,070	1,097	1,111	1,146	1,145	1,129	1,188
Royal Navy	310	280	254	299	237	250	248
Army	5	3	3	6	1	-	-
Royal Air Force	768	850	893	864	915	890	950
Call outs [2]	1,230	1,285	1,291	1,350	1,331	1,314	1,398
of Royal Navy helicopters	347	324	285	324	265	272	259
of Army helicopters [3]	8	3	3	7	1	-	-
of Royal Air Force helicopters	735	841	876	893	945	943	992
of Royal Air Force Nimrod aircraft	55	56	55	70	56	62	68
of other fixed wing aircraft [3]	13	2	4	3	-	-	6
of Royal Air Force Marine craft [3]	9	6	8	7	8	1	-
of HM Ships & Auxiliary Vessels [3]	18	10	2	-	-	3	-
of Royal Air Force Mountain rescue teams	45	43	58	46	56	33	73
Persons rescued [4]	859	864	898	969	1,061	883	811
Civilian	783	799	832	880	1,004	826	747
Military	76	65	66	89	57	57	64
by Royal Navy helicopters	190	236	127	235	190	195	159
by Army helicopters	3	1	-	2	-	-	-
by Royal Air Force helicopters	644	603	707	711	838	674	638
by Royal Air Force Marine craft	1	-	1	3	2	-	-
by HM Ships & Auxiliary Vessels	-	5	-	-	-	-	-
by Royal Air Force Mountain rescue teams	21	19	63	18	31	14	14

1. Since more than one arm of the Services may be involved in some incidents, the total may not be the sum of the incidents attended by the Services separately.
2. More than one element of the Search and Rescue services may be called out to a reported incident.
3. Not on permanent standby.
4. Figures for persons rescued relate only to those who were actually removed (alive) from a hazard or who were transported for urgent medical attention.

6.3 Military aid to civil ministries during industrial disputes: involvement of Service personnel

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
Disputes requiring involvement of Service personnel: [1]	*Prison officers*	*Ambulance drivers*	*Ambulance drivers Railway workers Water workers*	*Fire Service*	-	-	*Prison officers Fire Service*
Deployment							
Period (weeks)	17	-	1	-	-	-	19
Number of personnel	1,000	18	305	-	-	-	275
Total estimated effort (man weeks)	17,000	3	305	-	-	-	389
Standby [2]:							
Total estimated effort (man weeks)	60,000	54,000	59,000	23,000	-	-	1560

1. Details for the latest year are provisional.
2. Covers Service personnel at 72 or less hours notice to deploy.

6.4 Expenditure on offshore tasks included in the Defence budget [1]

£ million

	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Total expenditure on offshore tasks	36.80	42.94	45.99	44.75	46.41	48.20	40.51
Offshore protection [2]	21.40	27.04	32.12	32.17	33.98	30.23	25.02
RN Fishery Protection Squadron [3]							
Offshore [4]	7.90	8.30)	20.53	20.76	19.50	24.70	24.3
Coastal	6.80	9.30)					
RAF Nimrod aircraft [5]	6.30	8.99	11.21	10.87	13.83	4.80	-
Headquarters of Captain Fishery Protection	0.40	0.45	0.38	0.54	0.65	0.73	0.72
Hydrographic surveys of home waters [6]	15.40	15.90	13.87	12.58	12.43	17.97	15.49

1. The figures given in this table are based on the original *Supply Estimates* and reflect the price levels of the Estimates for the years in question.
2. Includes protection of fisheries and oil and gas installations.
3. There is no longer a division between the offshore and coastal responsibility of the RN Fishery Protection Squadron.
4. Certain of these costs are recovered from the fisheries departments and the Department of Energy.
5. Certain of these costs are recovered from the fisheries departments, and up to 1985-86, from the Department of Energy. During 1985-86 aerial surveillance of offshore energy installations ceased and in 1986/87 aerial patrols of fishing areas ceased.
6. Department of Transport contributed towards these costs.

6.5 Fishery protection[1]

Number

	1980	1981	1982	1983	1984	1985	1986
Vessels boarded	1,508	1,548	1,869	2,102	1,858	1,687	1,458
In sea areas[2]							
IV North Sea	638	770	1,087	1,223	882	762	793
Vb Faroes) VI West of Scotland/Rockall)	26	21	10	10	3	5	-
VII Irish Sea/Celtic Sea/Bristol Channel/ Western Approaches/English Channel	844	757	772	869	973	920	665
Convictions arising from RN boardings[3]	22	43	27	18	19	29	39
Belgium	-	3	2	-	1	1	4
Denmark	2	6	2	9	2	6	6
Eire	1	2	2	-	-	-	-
France	8	7	1	2	1	2	7
Holland	-	4	1	-	1	2	6
Norway	-	1	-	-	-	-	-
Spain	1	7	6	-	6	9	8
United Kingdom	10	13	13	7	8	8	8
West Germany	-	-	-	-	-	1	-

Source: Ministry of Agriculture, Fisheries and Food

1. This table relates to activities of the RN Fishery Protection Squadron operating within the total UK fishing limits. Boardings carried out by vessels of the Department of Agriculture and Fisheries for Scotland are not included.

2. Sea areas as defined by the International Council for the Exploration of the Sea.

3. Comprises convictions obtained from prosecutions initiated by all United Kingdom Fisheries Departments.

160

6.6 Hydrographic services

	1980	1981	1982	1983	1984	1985	1986
	Number						
Surveying vessels							
Ocean	4	4	4	4	4	4	3
Coastal	4	4	4	4	4	4	5
Inshore	4	3	3	4	4	-	-
Survey Launch	-	-	-	-	-	1	1
Charts and publications produced							
New charts	226	143	163	226	198	152	118
Navigational	108	89	127	157	144	101	89
Lattice	61	35	32	65	32	41	9
Miscellaneous	57	19	4	4	22	10	20
New editions of charts	254	300	372	277	280	266	274
Navigational	194	220	281	211	214	206	214
Lattice	53	70	76	55	53	46	51
Miscellaneous	7	10	15	11	13	14	9
Small corrections to charts	5,279	5,632	5,883	6,392	6,842	6,633	7,273
Notices to Mariners	3,287	3,491	3,734	3,998	4,108	4,003	4,409
Block corrections to charts	158	171	305	246	232	266	163
Radio Navigational Warnings	723	860	929	1,075	1,314	1,862	2,078
Revised volumes:							
Sailing Directions (a series of 75 books)	4	4	4	5	6	1	3
Lights list (a series of 12 books)	8	9	8	8	8	7	9
Admiralty list of radio signals (6 volumes)	5	6	6	6	6	5	5
Tide tables (3 volumes)	3	3	3	3	3	3	3
Supplements to Sailing Directions	37	46	49	35	27	31	26
	Thousands						
Sales and issues							
Charts printed	3,522	3,587	3,546	2,769	3,185	2,761	2,468
Charts sold	2,772	2,845	2,686	2,334	2,354	2,221	1,983
Charts issued to government departments	610	511	636	549	528	499	499
Books sold	575	613	571	502	524	504	474

6.7 Meteorological Office

	Outturn[1]					Estimates	
	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
	£ million[3]						
Finance							
Expenditure[2]	49.33	51.06	59.96	63.13	66.43	68.51	70.63
Receipts	19.17	17.01	18.93	20.92	21.76	23.33	22.86
Net Expenditure	30.16	34.05	41.03	42.21	44.67	45.18	47.77
	Thousands						
Activites							
For aviation							
Meteorological briefings in UK	373	353	325	353	304	. .	. .
Forecasts in UK	1,704	1,795	1,940	2,293	2,090	. .	. .
Other than for aviation							
Forecast enquiries answered	2,008	1,794	1,715	1,579	1,600	. .	. .
Automatic Telephone Weather Service-calls made	30,600	24,600	25,100	26,700	31,200	. .	. .
Climatological enquiries	37	34	33	53	59	. .	. .
	Number						
Local radio stations for which Meteorological Office staff broadcast forecasts[4]	24	30	41	41	47	. .	. .

1. These figures combine actual expenditure, where known, and the original Estimates where Meteorological Office expenditure cannot be distinguished from that of other establishments. Common support services expenditure is excluded.
2. Works expenditure is included.
3. Outturn and estimates are given at outturn and estimates prices respectively.
4. Scripts are also provided for both national and local radio services.

Additional information may be found in the following publications. Many of these are referenced in the CSO Guide to Official Statistics which also gives details of more general Defence interests.

Annual Abstract of Statistics. HMSO (The Defence Chapter includes longer runs of data for some of the tables included here).

Appropriation Accounts: Class 1 Defence (in Volume 1)

1979-80	HC 96 15 January 1981
1980-81	HC 76 9 December 1981
1981-82	HC 42 17 November 1982
1982-83	HC 881 26 October 1983
1983-84	HC 614 23 October 1984
1984-85	HC 592 23 October 1985
1985-86	HC 586 21 October 1986

Armed Forces Pay Review Body reports

Tenth	1981 Cmnd. 8241
Eleventh	1982 Cmnd. 8549
Twelfth	1983 Cmnd. 8880
Thirteenth	1984 Cmnd. 9255
Fourteenth	1985 Cmnd. 9526
Fifteenth	1986 Cmnd. 9784

Civil Service Statistics: HMSO; annual.

Declaration on Berlin: Cmnd. 8564 dated 26 May 1952.

Economic Trends: HMSO; No 394 August 1986, contains an article entitled 'Central Government Expenditure on Research and Development in the 1984'.

Government's Expenditure Plans: 1987-88 to 1989-90, Cmnd. 56-1.

Guide to the Classification for Overseas Trade Statistics 1987: obtainable from the Controller, Statistical Office, Customs & Excise, Southend-on-Sea, SS2 9AL.

Hydrographer of the Navy: annual report; obtainable from the Hydrographic Department, MOD, Taunton, Somerset.

International Statistical Classification of Diseases, Injuries and Causes of Death: Ninth Revision (1977); World Health Organisation.

Meteorological Office : HMSO annual report.

Navy, Army and Air Force Institutes (NAAFI): annual report and accounts; obtainable from NAAFI, Imperial Court, London, SE11.

Overseas Trade Statistics of the United Kingdom: HMSO; monthly and annually.

Reports on the Armed Forces Accommodation and Family Education surveys. Details of the material available may be obtained from Ministry of Defence (Stats Surveys), Northumberland House, Northumberland Ave, London, WC2N 5BP.

Reports on the health of the Armed Forces. Details of the material available may be obtained from Ministry of Defence (Medical Statistics), Government Buildings, Stanmore, Middlesex, HA7 4PZ.

Standard Industrial Classification; Revised 1980: HMSO.

Statistical News: HMSO; No 51 November 1980, contains an article entitled 'Employment and Defence' by Chris Pite.

Supply Estimates, Class 1 Defence

1980-81	HC 469-I
1981-82	HC 190
1982-83	HC 214-I
1983-84	HC 237-I
1984-85	HC 292-I
1985-86	HC 239-I
1986-87	HC 284-I
1987-88	HC 227

United Kingdom National Accounts: HMSO; annual.

References are to table numbers.

A

Accommodation
  Married quarters 5.12
Age distributions
  Service pensioners 5.17
  Service personnel 5.9
Aid to civil ministries 6.3
Aircraft accidents 5.7, 5.8
Apprentices
  by establishment 4.12
  by location 4.13

B

Balance of payments 2.6
  Exports 2.7
  Imports 2.8
Broadcasting 5.16

C

Cadet forces 4.9
Casualties 5.7
Civilian staff
  Deployment in UK 4.14
  Deployment overseas 4.15
  MOD Total 4.10
  Occupational groups 4.11
Commodity groups 2.5
Contracts 2.9

D

Deaths of service personnel
  Total 5.6
  UDR 6.1
Defence budget expenditure
  Allocation by commodity group 2.5
  Analysis by programme 2.3
  Equipment procurement 3.1
  National Accounts definition 2.1
  Offshore tasks 6.4
  Outturn figures 2.2
  Percentage of GDP 1.1
  Production and repair 3.4
  Principal headings 2.2
  Research and development 3.3
  Social expenditure 5.1
Deployment
  UK based personnel
    in UK 4.14
    overseas 4.15
Dockyards 3.7

E

Energy consumption 3.6
Entertainment 5.15
Equipment
  Major projects 3.2
  Principal headings 2.2
  Procurement expenditure 3.1
Exports 2.7

F

Fishery protection 6.5
Front line units 1.2

H

Hospitals 5.3
Hydrographic Services 6.6

I

Imports 2.8
Industrial analysis 2.5

L

Land
  Holdings by location 5.13
  Holdings by use 5.14
Locally engaged/entered
  Personnel 4.8

M

Manpower
  Percentage distribution 4.2
Married:
  Accommodation 5.12
  Numbers by age 5.9
  Numbers by rank 5.10
Medical
  Discharges 5.5
  Staff 5.2
Merchant fleet 1.3
Meteorological Office 6.7
Military salary 4.22
MOD strength by area 4.1

N

NAAFI 5.15
Northern Ireland 6.1

O

Occupational groups
  Civilian losses/recruitment 4.20
  Civilian strengths 4.11
  Service outflow 4.21
Offshore tasks 6.4
Outflow of Service personnel
  By category 4.19
  By service 4.18
  Trained 4.21
Overseas deployment
  Locally engaged/entered personnel 4.8
  UK based personnel 4.15

P

Pay indices and rates 4.22
Pensioners 5.17
Personnel strengths
  Civilian 4.10
  Service 4.5
Procurement expenditure 3.1
Production expenditure 3.4
Programme analysis
  Civilian personnel 4.4
  Defence budget 2.3
  Service personnel 4.3
  Total manpower (percent) 4.2

Q

Qualifications 5.11

R

Rank distribution 5.10
Recruitment
  Civilian 4.20
  Service 4.16
  Service by category 4.17
Research & Development 3.3
Reserves and
  Auxiliary forces 4.7
Royal Dockyards 3.7

S

Seafarers 1.4
Search and rescue 6.2
Security in Northern Ireland 6.1
Sickness 5.4
Social expenditure 5.
Sponsorship 5.11
SSVC 5.16
Stocks at major depots 3.5
Strengths
  Armed forces 1.2
  Cadet forces 4.9
  Civilians 4.10
  Regular forces 4.5
  Reserves 4.7
  Trained forces 4.6

U

Ulster Defence Regiment (UDR) 6.1
Uniformed medical staff 5.2

W

Works, buildings and land responsibilities 2.4

601101/3600/5/87 Designed by CS(Graphics)2
Printed by CS(Rep S)LP Ea

162

HMSO publications are available from:

HMSO Publications Centre

(Mail and telephone orders only)
PO Box 276, London SW8 5DT
Telephone orders 01 622 3316
General inquiries 01 211 5656

HMSO Bookshops

49 High Holborn, London, WC1V 6HB 01 211 5656 (Counter service only)
258 Broad Street, Birmingham, B1 2HE 021 643 3757
Southey House, 33 Wine Street, Bristol, BS1 2BQ (0272) 24306/24307
9-21 Princess Street, Manchester, M60 8AS 061 834 7201
80 Chichester Street, Belfast, BT1 4JY (0232) 238451
13a Castle Street, Edinburgh EH2 3AR 031 225 6333

HMSO's Accredited Agents

(see Yellow Pages)

And through good booksellers

ISBN 0 10 101013 3

jote